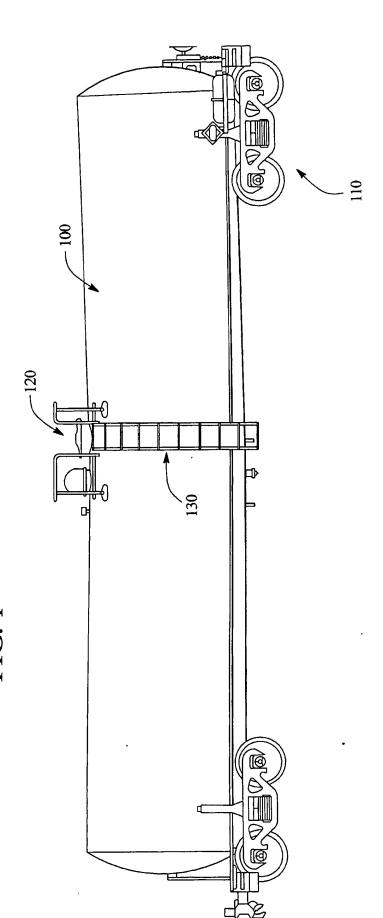


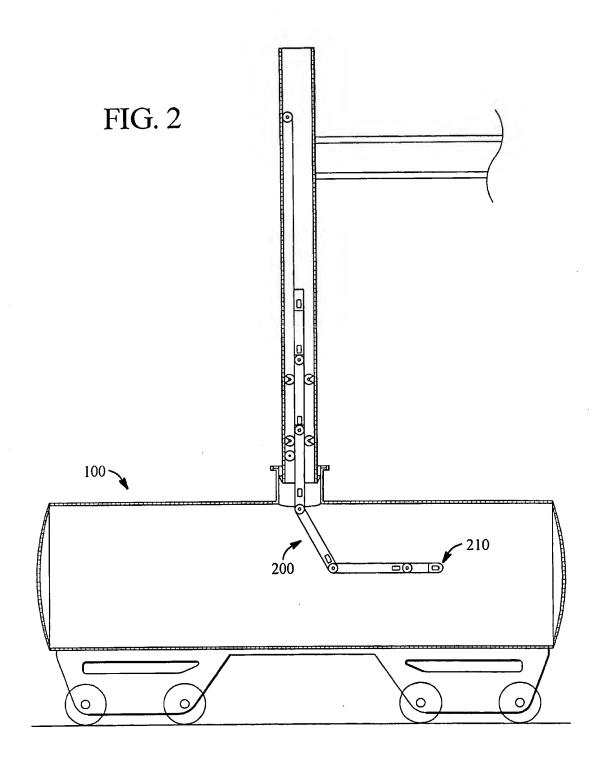
REPLACEMENT SHEETS
Filing Date: September 29, 2000
U.S. Patent Application No. 09/672, 793
Title: Method and Arrangement for Inspection and Requalification of...
Patent Agent: Patrick D. Richards (Reg. No. 48,905)
Tel: 312.372, 2000 Fax: 312.984.7700
Docket No. 47440-015 (p.k.a. 47440-027)

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Filing Date: September 29, 2000
U.S. Patent Application No. 09/672,793
Title: Method and Arrangement for Inspection and Requalification of...
Patent Agent: Patrick D. Richards (Reg. No. 48,905)
Tel: 312.372.2000 Fax: 312.984.7700
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Patent Agent: Patrick D. Richards (Reg. No. 48,905) Tel: 312.372.2000 Fax: 312.984.7700 Docket No. 47440-015 (p.k.a. 47440-027) Sheet 3 of 85 HM-201 2014 Visually inspect the thermal protection Inspection Procedure systems, tank head puncture resistance systems, coupler vertical Visual inspection of tank 2001 restraint systems and systems used to shell interior and exterior protect discontinuities to ensure their integrity Visual inspection of piping, 2002 valves, fittings and gaskets 2015 Remove the safety relief device FIG. 3 from the tank car and Visual inspection of brake visually inspect for damage rigging, safety appliances, draft system, valves and fittings 2003 Test the safety relief device Visual inspection of all with air to ensure that it 2016 2004 closures and protective conforms to the start-tohousing on the Tank Car discharge pressure for the specification of hazardous material Visual inspection of all the 2005 required markings on the Tank Car 2017 Visual 2006-Does the car inspection Does the car No have a lining for the of excess have an excess protection of the Yes flow flow valve? tank shell? 2008 2019 valve No Yes Enhanced visual inspection 2018 2007 Obtain of all fillet welds greater than Is lining 1/4" within 4 feet of the bottom the lining No inspection longitudinal centerline 2010 owned procedure by GE? from 2009 Manual Ultrasonic customer Does 2021 Flaw detection on No the Yes all circumferential 2020 car have interior butt-welds of the Perform lining heater inspection using tank shell two feet 2012 coils? Perform of the bottom GE approved lining Yes longitudinal procedure inspection centerline Automated Ultrasonic procedure 2022 Flaw detection on all according circumferential buttto Perform welds of the tank shelf customer hydrostatic coil Perform leakage requirements two feet of the bottom test pressure test longitudinal centerline 2013 Ultrasonic thickness examination of 2011 Place car into -2023 the tank shell, heads, sumps, manways, repair process and nozzles for each compartment

REPLACEMENT SHEETS Filing Date: September 29, 2000 U.S. Patent Application No. 09/672,793

Title: Method and Arrangement for Inspection and Requalification of...

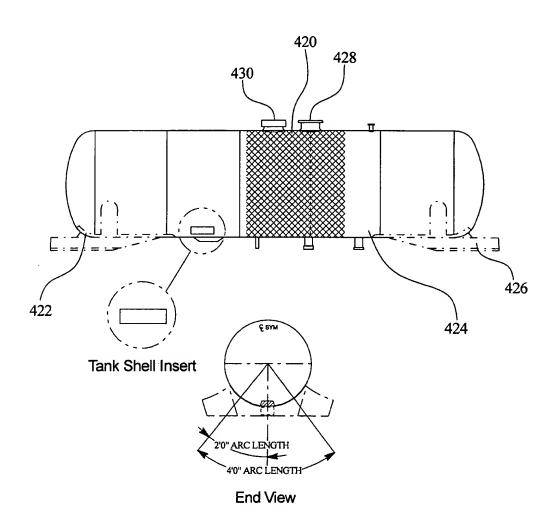
REPLACEMENT SHEETS
Filing Date: September 29, 2000
U.S. Patent Application No. 09/672,793
Title: Method and Arrangement for Inspection and Requalification of...
Patent Agent: Patrick D. Richards (Reg. No. 48,905)
Tel: 312.372.2000 Fax: 312.984.7700

Desired No. 47440-015 (n.k.a. 47440-027) Sheet 4 of

Docket No. 47440-015 (p.k.a. 47440-027)

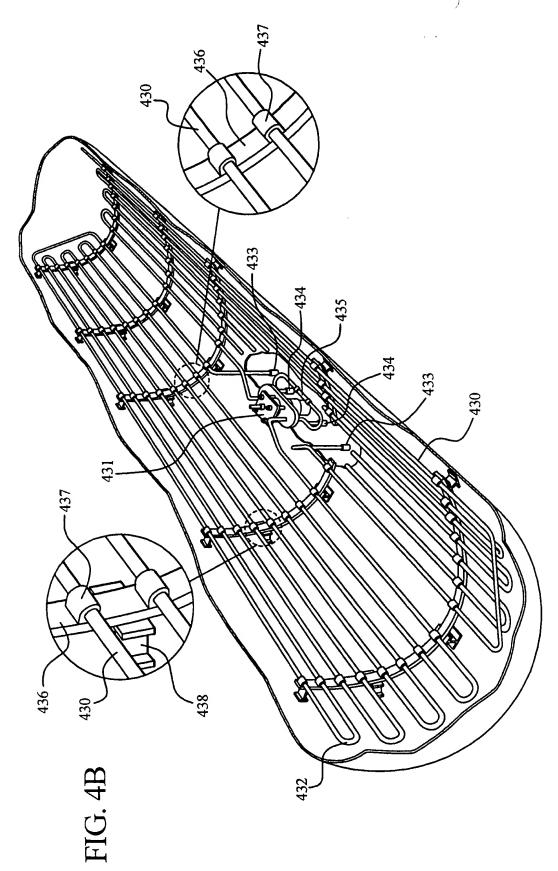
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FIG. 4A



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Filing Date: September 29, 2000
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Title: Method and Arrangement for Inspection and Requalification of...
Patent Agent: Patrick D. Richards (Reg. No. 48,905)
Tel: 312.372.2000 Fax: 312.984.7700
Docket No. 47440-015 (p.k.a. 47440-027) Sheet 5 of

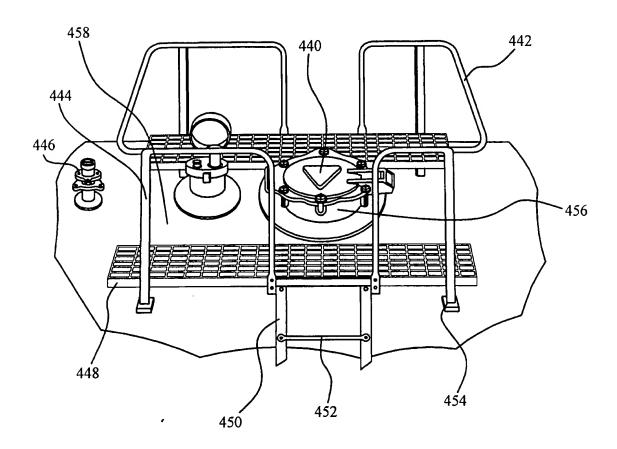
Sheet 5 of 85



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Filing Date: September 29, 2000
U.S. Patent Application No. 09/672,793
Title: Method and Arrangement for Inspection and Requalification of...
Patent Agent: Patrick D. Richards (Reg. No. 48,905)
Tel: 312.372.2000 Fax: 312.984.7700
Docket No. 47440-015 (p.k.a. 47440-027) Sheet 6 of

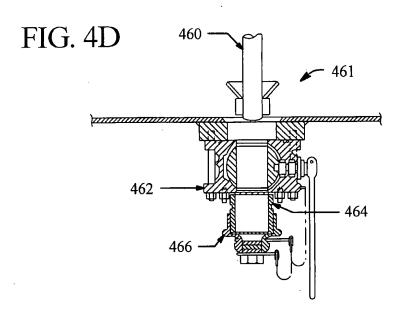
Sheet 6 of 85

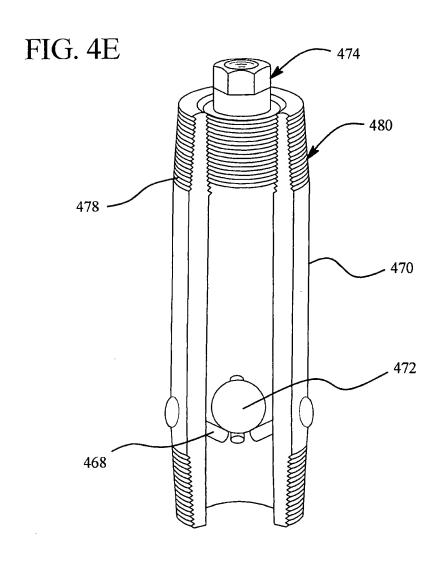
FIG. 4C



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Filing Date: September 29, 2000
U.S. Patent Application No. 09/672,793
Title: Method and Arrangement for Inspection and Requalification of...
Patent Agent: Patrick D. Richards (Reg. No. 48,905)
Tel: 312.372.2000 Fax: 312.984.7700
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Title: Method and Arrangement for Inspection and Requalification of...

Patent Agent: Patrick D. Richards (Reg. No. 48,905)
Tel: 312.372.2000 Fax: 312.984.7700

Docket No. 47440-015 (p.k.a. 47440-027)

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FIG. 4F

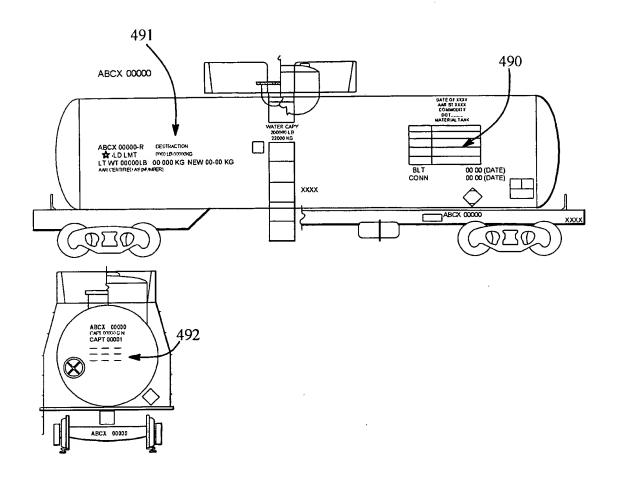


FIG. 4G

		STATION STENCIL	QUALIFIED	DUE
TANK QUALIFIC	CATION			
SERVICE EQUIPMENT				
(1a)	(1b)			
(2a)	(2b)			
COATING/LINING				
TYPE	(3a)			
DATE APPLIED	(3b)			
88.B.2.INSPECTION				

Title: Method and Arrangement for Inspection and Requalification of...

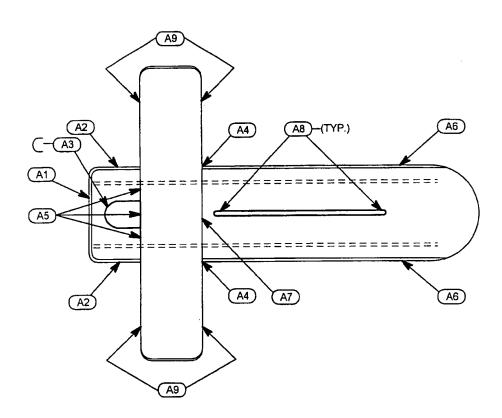
Patent Agent: Patrick D. Richards (Reg. No. 48,905)

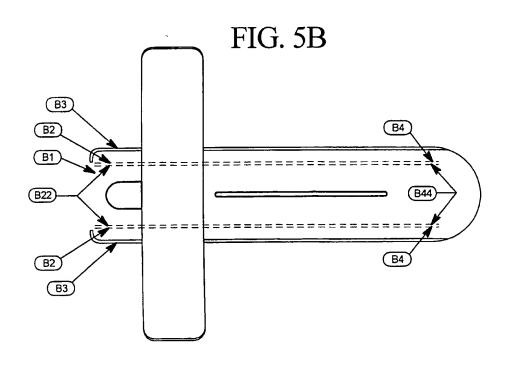
Tel: 312.372.2000 Fax: 312.984.7700

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### FIG. 5A

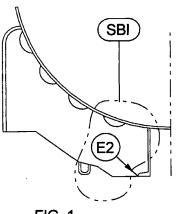




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Filing Date: September 29, 2000
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Patent Agent: Patrick D. Richards (Reg. No. 48,905)
Tel: 312.372.2000 Fax: 312.984.7700
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# FIG. 5C





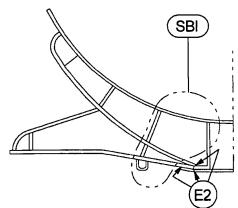
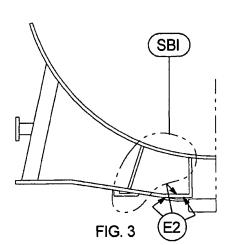
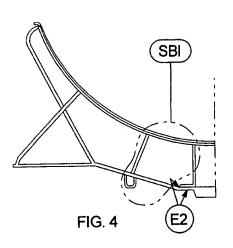
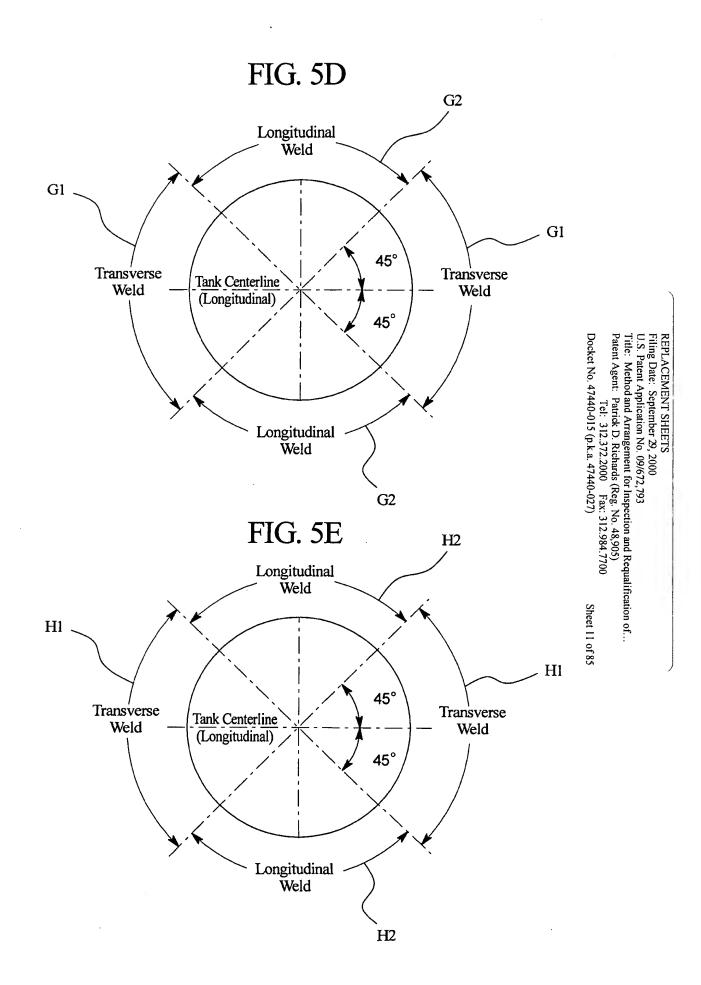


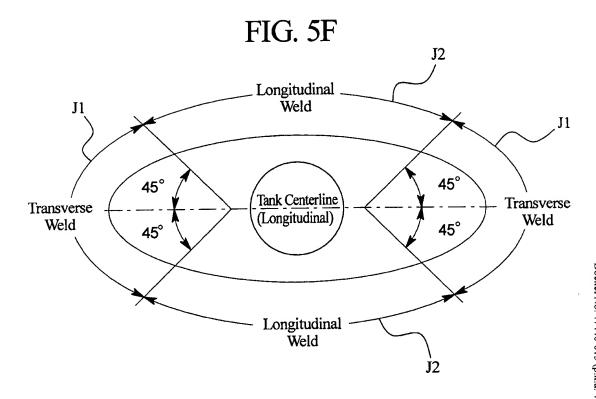
FIG. 2

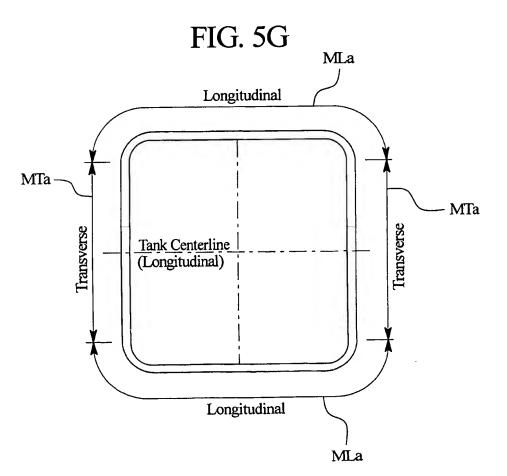




SBI FIG. 5







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Filing Date: September 29, 2000
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Title: Method and Arrangement for Inspection and Requalification of...
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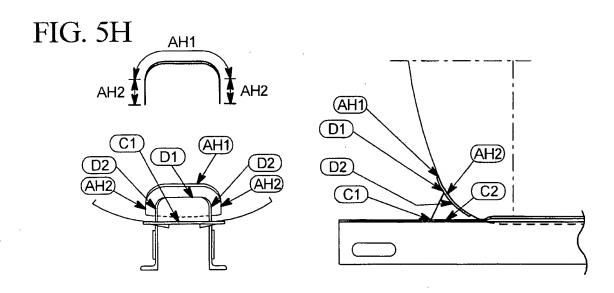
Title: Method and Arrangement for Inspection and Requalification of...

Patent Agent: Patrick D. Richards (Reg. No. 48,905)

Tel: 312.372.2000 Fax: 312.984.7700

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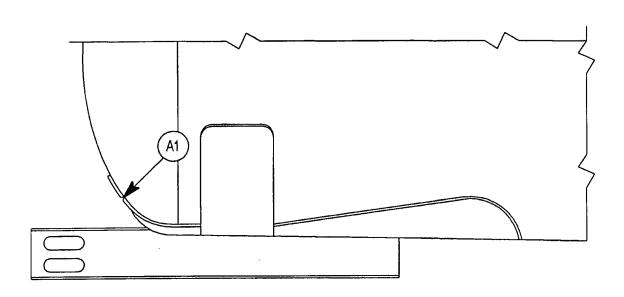
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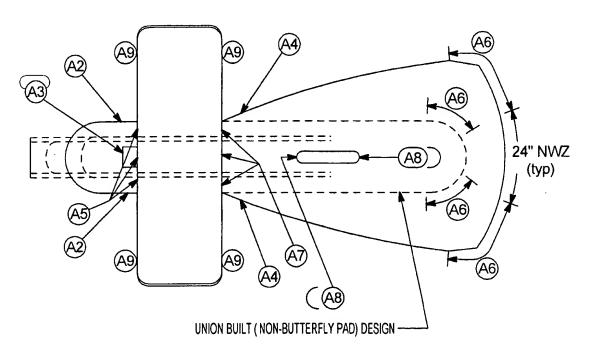


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Filing Date: September 29, 2000
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Title: Method and Arrangement for Inspection and Requalification of...
Patent Agent: Patrick D. Richards (Reg. No. 48,905)
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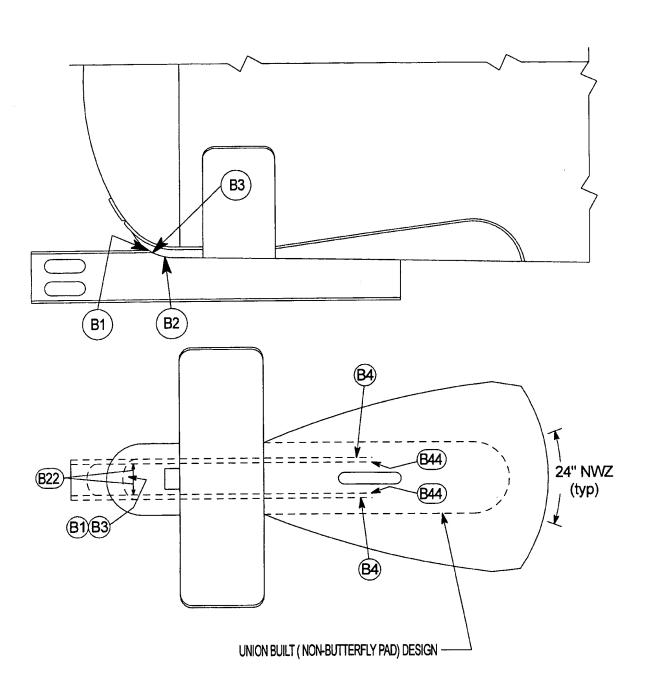
### FIG. 6A





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FIG. 6B



U.S. Patent Application No. 09/672,793

Title: Method and Arrangement for Inspection and Requalification of...

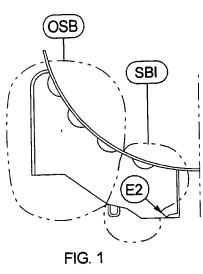
Patent Agent: Patrick D. Richards (Reg. No. 48,905)

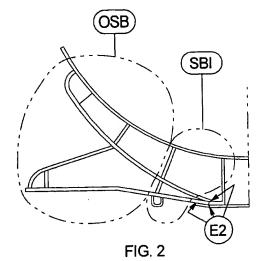
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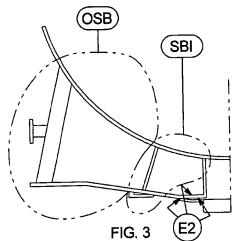
Docket No. 47440-015 (p.k.a. 47440-027)

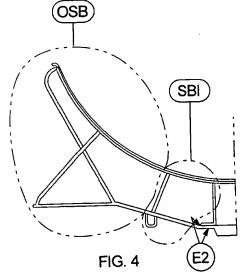
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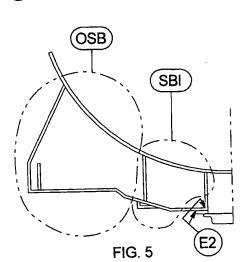
# FIG. 6C

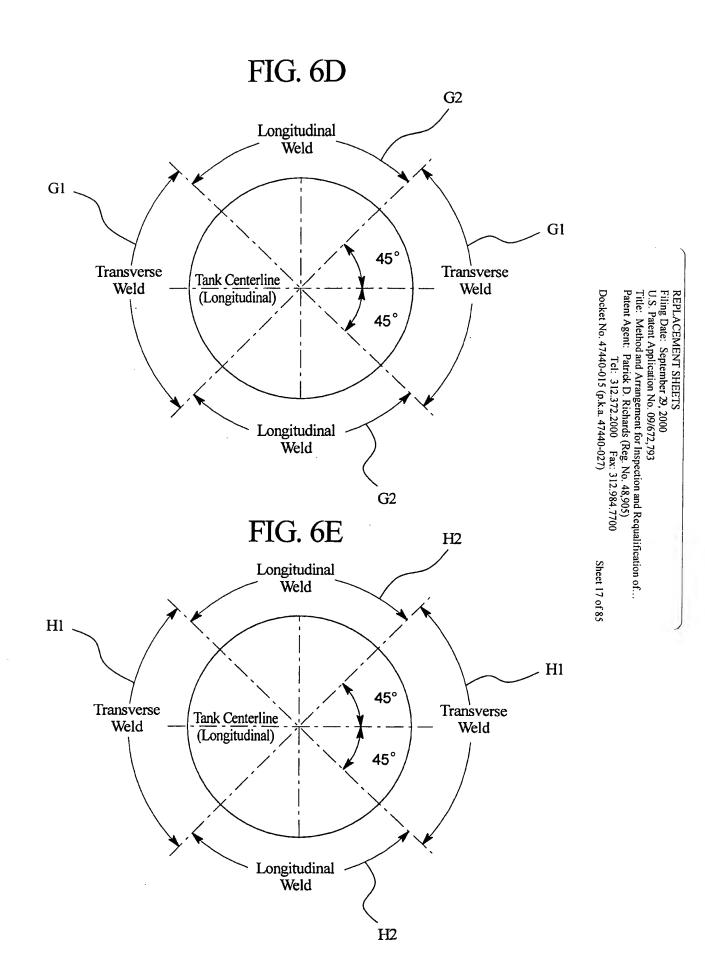












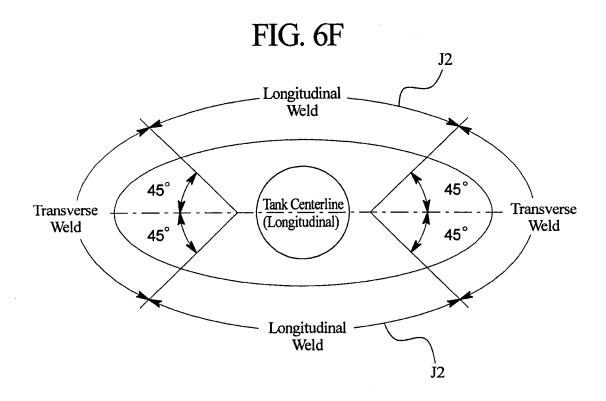
U.S. Patent Application No. 09/672,793

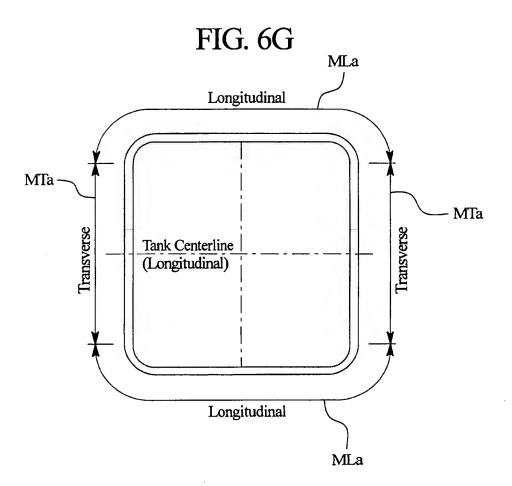
Title: Method and Arrangement for Inspection and Requalification of...

Patent Agent: Patrick D. Richards (Reg. No. 48,905)
Tel: 312.372.2000 Fax: 312.984.7700

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Title: Method and Arrangement for Inspection and Requalification of...

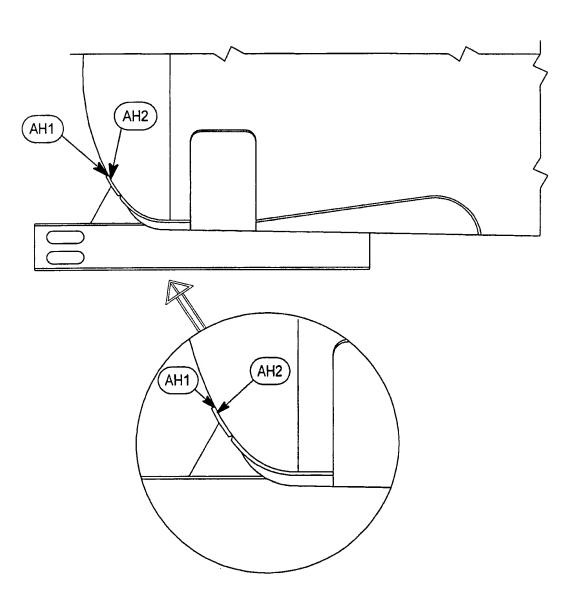
Patent Agent: Patrick D. Richards (Reg. No. 48,905)

Tel: 312.372.2000 Fax: 312.984.7700

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FIG. 6H



Title: Method and Arrangement for Inspection and Requalification of...

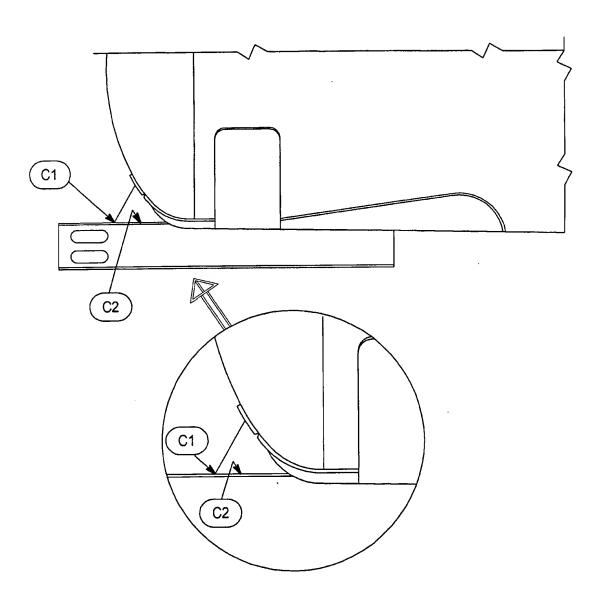
Patent Agent: Patrick D. Richards (Reg. No. 48,905)

Tel: 312.372.2000 Fax: 312.984.7700

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FIG. 6I



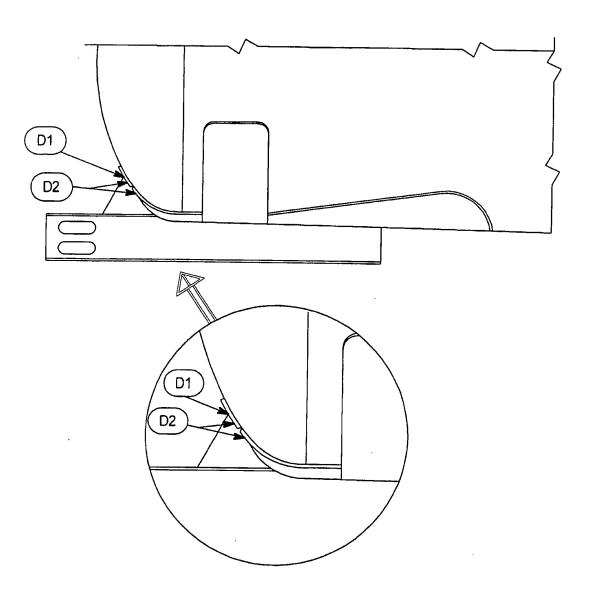
Title: Method and Arrangement for Inspection and Requalification of...
Patent Agent: Patrick D. Richards (Reg. No. 48,905)

Tel: 312.372.2000 Fax: 312.984.7700

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FIG. 6J



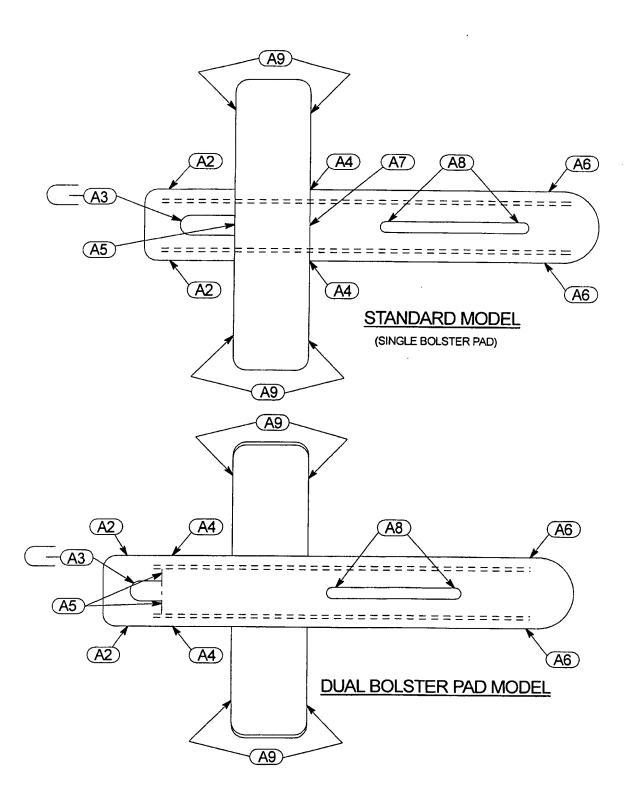
Title: Method and Arrangement for Inspection and Requalification of...

Patent Agent: Patrick D. Richards (Reg. No. 48,905)
Tel: 312.372.2000 Fax: 312.984.7700

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### FIG. 7A



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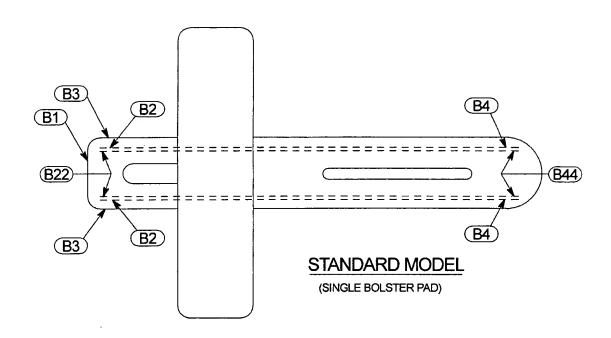
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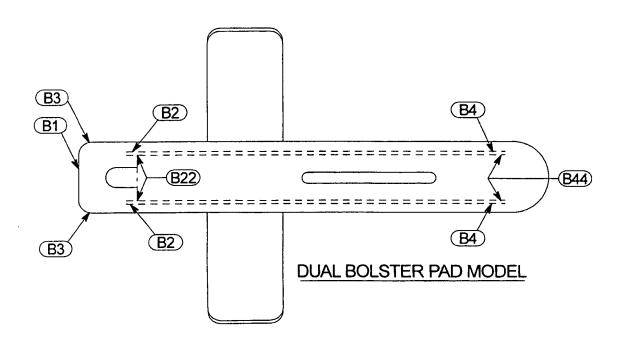
Patent Agent: Patrick D. Richards (Reg. No. 48,905)
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### FIG. 7B





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Patent Agent: Patrick D. Richards (Reg. No. 48,905)
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# FIG. 7C

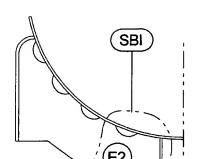
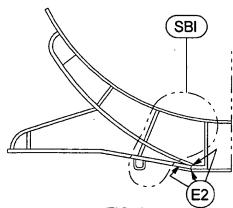
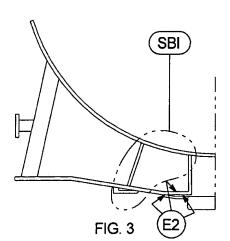


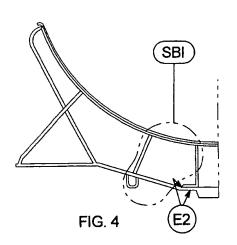
FIG. 1

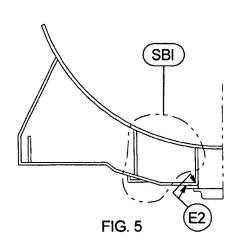


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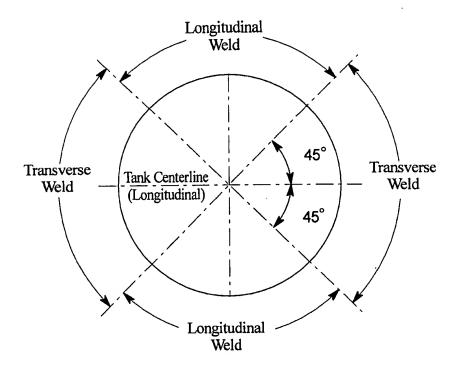
FIG. 2



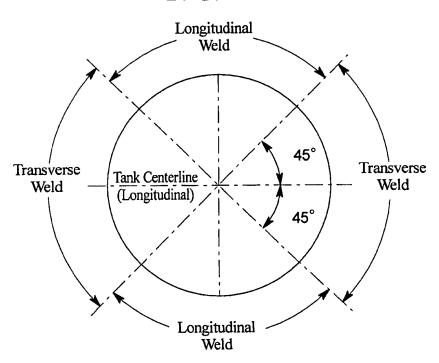




### FIG. 7D



#### FIG. 7E



REPLACEMENT SHEETS
Filing Date: September 29, 2000
U.S. Patent Application No. 09/672,793
Title: Method and Arrangement for Inspection and Requalification of...
Patent Agent: Patrick D. Richards (Reg. No. 48,905)
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Title: Method and Arrangement for Inspection and Requalification of...

Patent Agent: Patrick D. Richards (Reg. No. 48,905)
Tel: 312.372.2000 Fax: 312.984.7700

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FIG. 7F

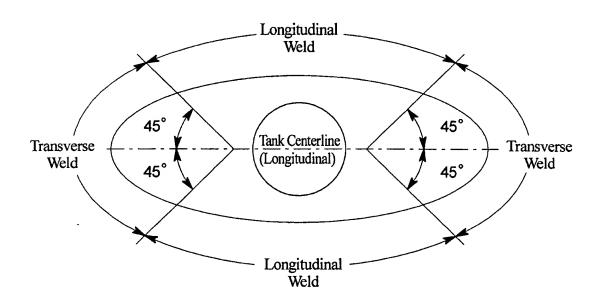
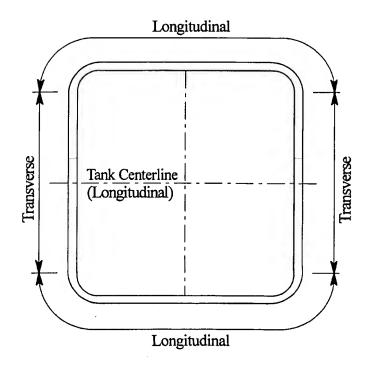


FIG. 7G



REPLACEMENT SHEETS

Filing Date: September 29, 2000 U.S. Patent Application No. 09/672,793

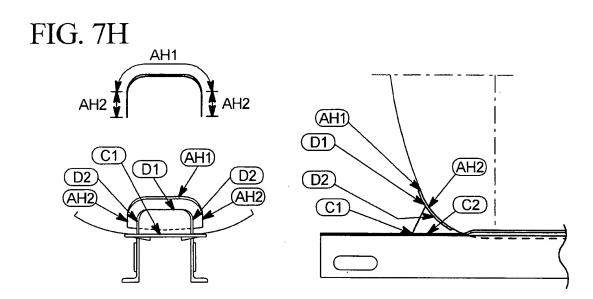
Title: Method and Arrangement for Inspection and Requalification of...

Patent Agent: Patrick D. Richards (Reg. No. 48,905)

Tel: 312.372.2000 Fax: 312.984.7700

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Patent Agent: Patrick D. Richards (Reg. No. 48,905)
Tel: 312.372.2000 Fax: 312.984.7700
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### FIG. 8A

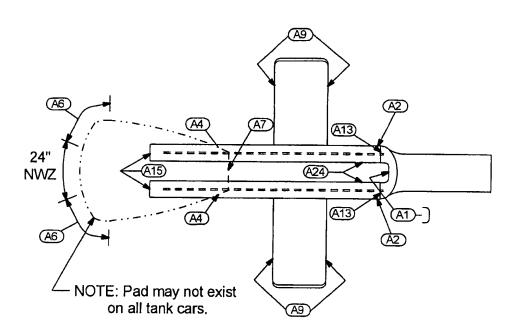
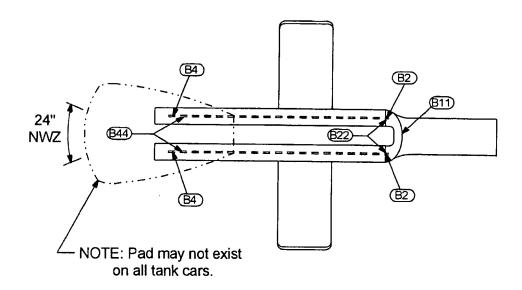


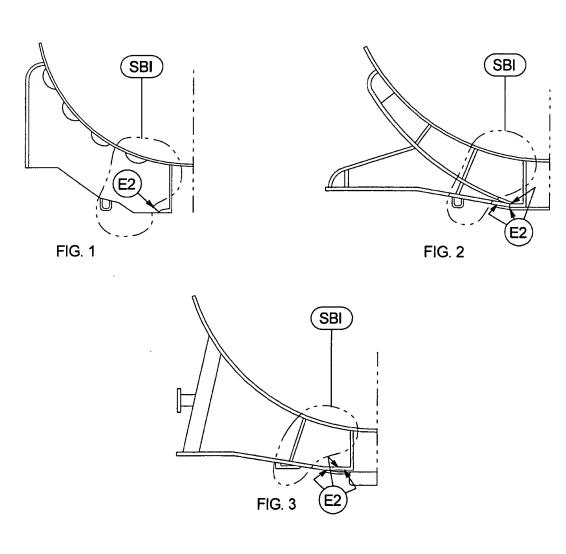
FIG. 8B

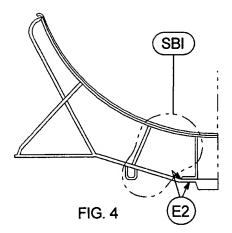


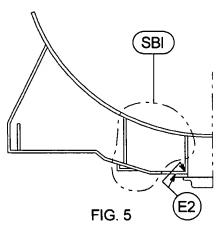
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Filing Date: September 29, 2000
U.S. Patent Application No. 09/672,793
Title: Method and Arrangement for Inspection and Requalification of...
Patent Agent: Patrick D. Richards (Reg. No. 48,905)
Tel: 312.372.2000 Fax: 312.984.7700
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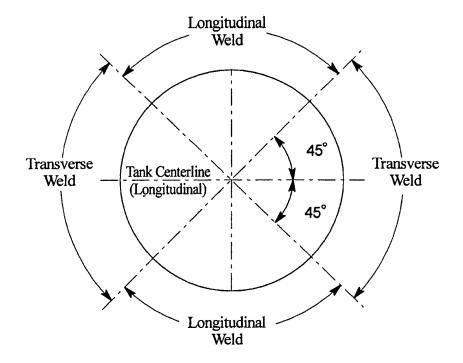
# FIG. 8C



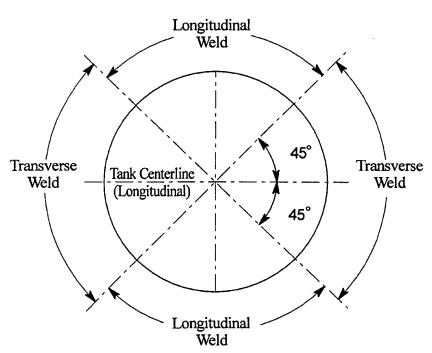




# FIG. 8D

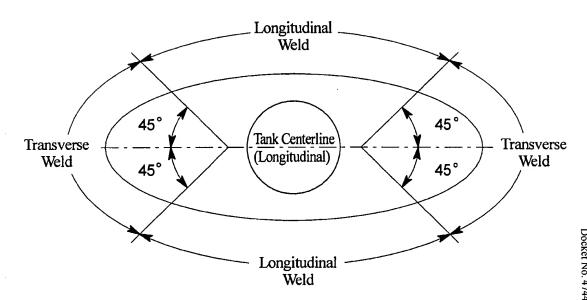


#### FIG. 8E

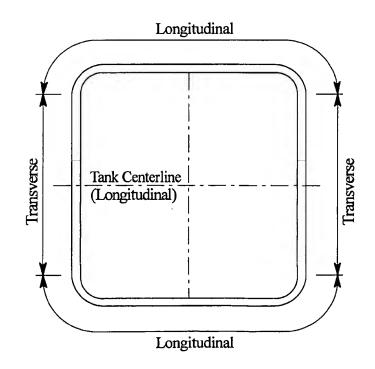


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Filing Date: September 29, 2000
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Patent Agent: Patrick D. Richards (Reg. No. 48,905)
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FIG. 8F



# FIG. 8G



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U.S. Patent Application No. 09/672,793
Title: Method and Arrangement for Inspection and Requalification of...
Patent Agent: Patrick D. Richards (Reg. No. 48,905)
Patent Agent: 312,372,2000 Fax: 312,984,7700
Docket No. 47440-015 (p.k.a. 47440-027)
Sheet 31 of 85

REPLACEMENT SHEETS

Filing Date: September 29, 2000

U.S. Patent Application No. 09/672,793

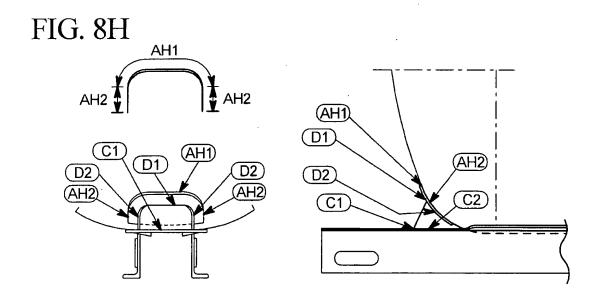
Title: Method and Arrangement for Inspection and Requalification of...

Patent Agent: Patrick D. Richards (Reg. No. 48,905)

Tel: 312.372.2000 Fax: 312.984.7700

Docket No. 47440-015 (p.k.a. 47440-027) Sheet 32 of

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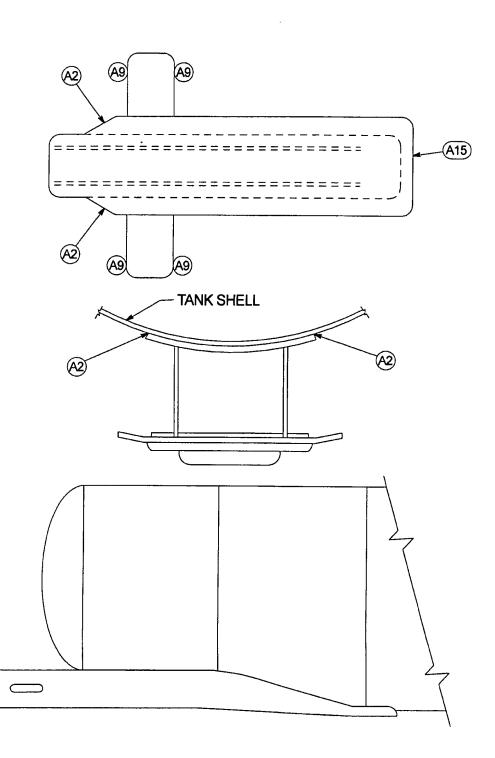
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Filing Date: September 29, 2000
U.S. Patent Application No. 09/672,793
Title: Method and Arrangement for Inspection and Requalification of...
Patent Agent: Patrick D. Richards (Reg. No. 48,905)
Tel: 312.372.2000 Fax: 312.984.7700

Docket No. 47440-015 (p.k.a. 47440-027)

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FIG. 9A

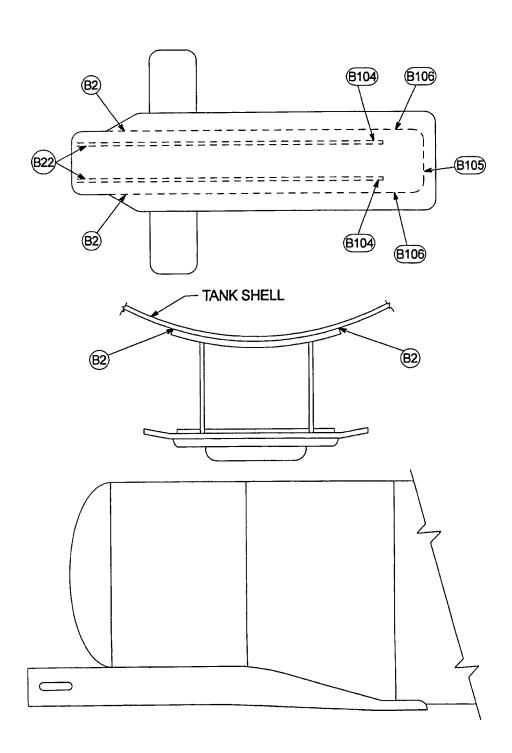


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U.S. Patent Application No. 09/672,793
Title: Method and Arrangement for Inspection and Requalification of...
Patent Agent: Patrick D. Richards (Reg. No. 48,905)
Tel: 312.372.2000 Fax: 312.984.7700

Docket No. 47440-015 (p.k.a. 47440-027)

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### FIG. 9B



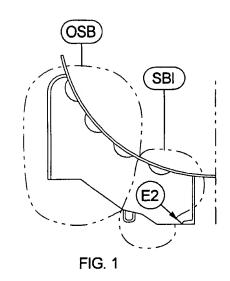
Title: Method and Arrangement for Inspection and Requalification of...
Patent Agent: Patrick D. Richards (Reg. No. 48,905)

Tel: 312.372.2000 Fax: 312.984.7700

Docket No. 47440-015 (p.k.a. 47440-027) Sheet 35 (20)

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# FIG. 9C



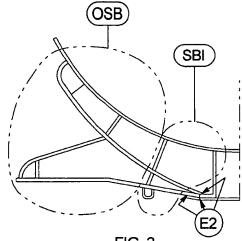
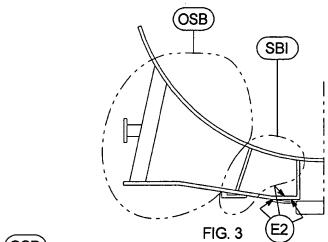
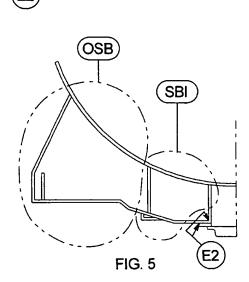


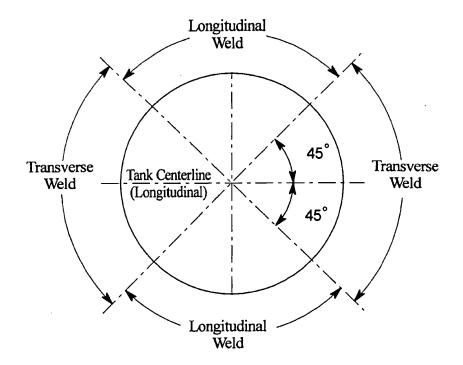
FIG. 2



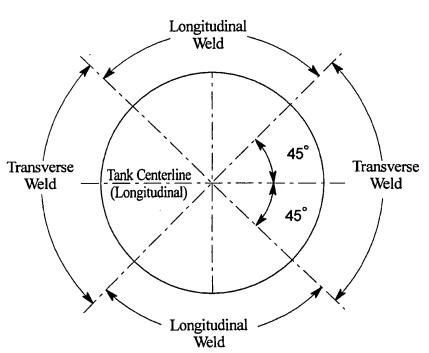
OSB SBI FIG. 4



### FIG. 9D



### FIG. 9E



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U.S. Patent Application No. 09/672,793
Title: Method and Arrangement for Inspection and Requalification of...
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FIG. 9F

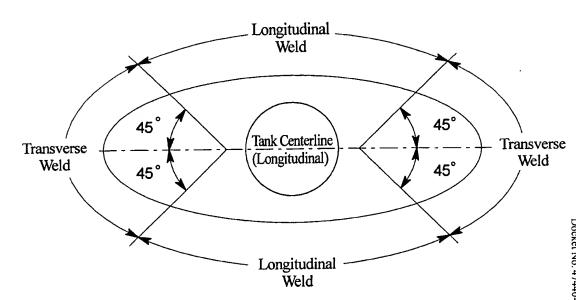
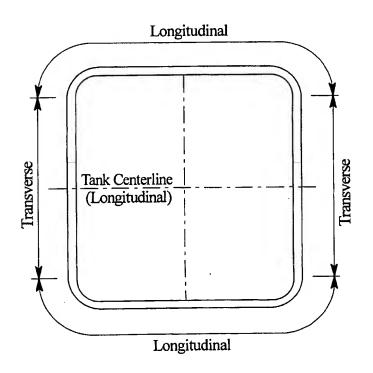


FIG. 9G



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Filing Date: September 29, 2000
U.S. Patent Application No. 09/672,793
Title: Method and Arrangement for Inspection and Requalification of...
Patent Agent: Patrick D. Richards (Reg. No. 48,905)
Tel: 312,372,2000 Fax: 312,984,7700
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Sheet 37 of 85

REPLACEMENT SHEETS Filing Date: September 29, 2000

U.S. Patent Application No. 09/672,793

Title: Method and Arrangement for Inspection and Requalification of...

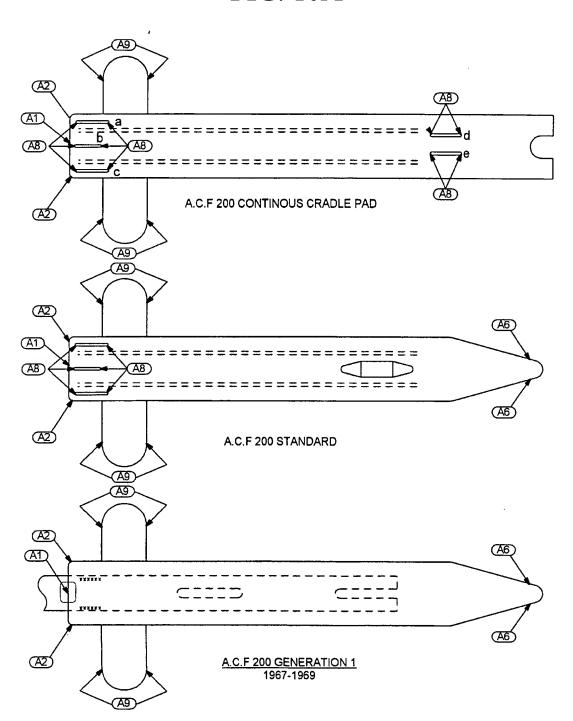
Patent Agent: Patrick D. Richards (Reg. No. 48,905)

Tel: 312.372.2000 Fax: 312.984.7700

Docket No. 47440-015 (p.k.a. 47440-027)

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## FIG. 10A

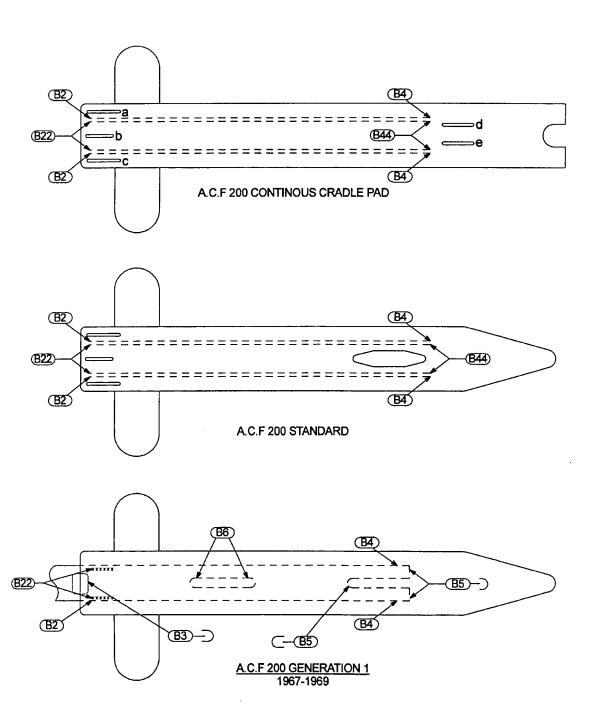


Title: Method and Arrangement for Inspection and Requalification of...
Patent Agent: Patrick D. Richards (Reg. No. 48,905)
Tel: 312.372.2000 Fax: 312.984.7700

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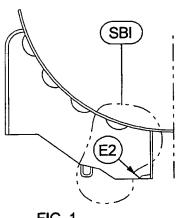
#### FIG. 10B



REPLACEMENT SHEETS
Filing Date: September 29, 2000
U.S. Patent Application No. 09/672,793
Title: Method and Arrangement for Inspection and Requalification of...
Patent Agent: Patrick D. Richards (Reg. No. 48,905)
Tel: 312.372.2000 Fax: 312.984.7700
Docket No. 47440-015 (p.k.a. 47440-027) Sheet 40 of the second secon

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# FIG. 10C





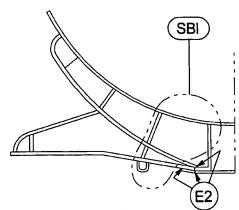
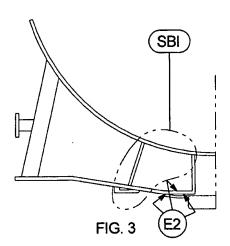
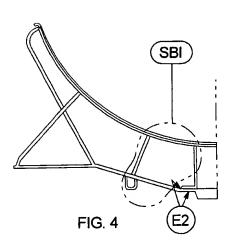
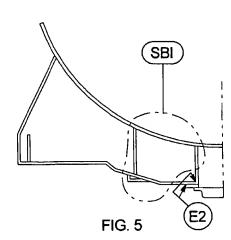


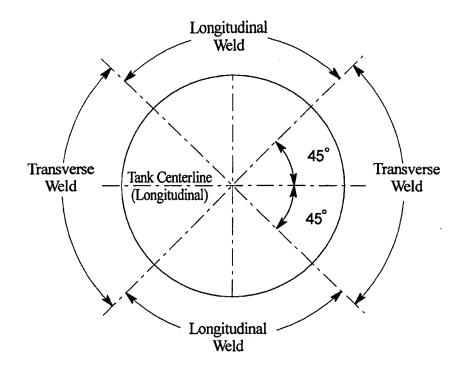
FIG. 2



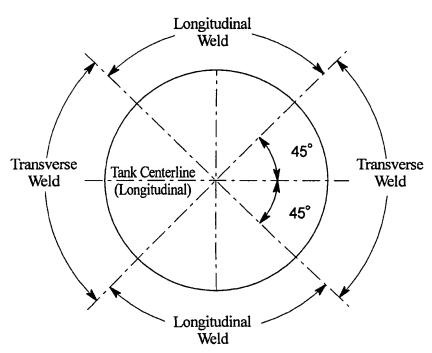




## FIG. 10D



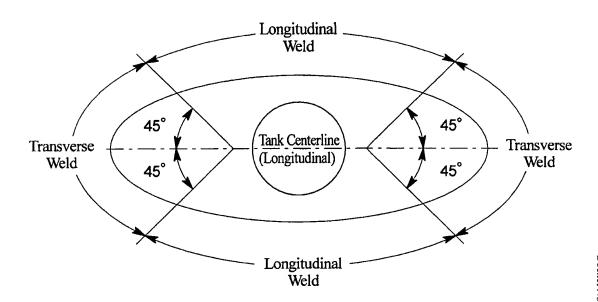
# FIG. 10E



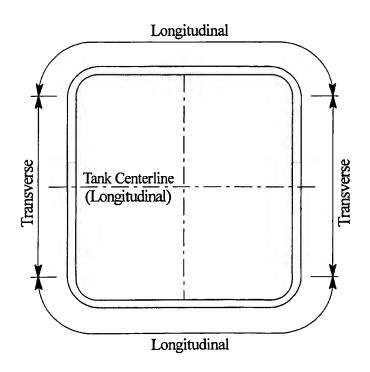
REPLACEMENT SHEETS
Filing Date: September 29, 2000
U.S. Patent Application No. 09/672,793
Title: Method and Arrangement for Inspection and Requalification of...
Patent Agent: Patrick D. Richards (Reg. No. 48,905)
Tel: 312.372,2000 Fax: 312.984.7700
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# FIG. 10F

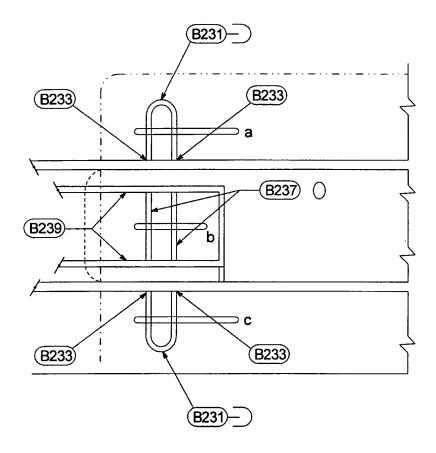


## FIG. 10G

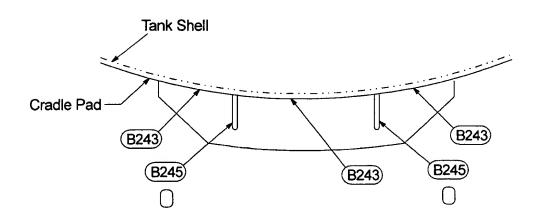


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Filing Date: September 29, 2000
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Title: Method and Arrangement for Inspection and Requalification of...
Patent Agent: Patrick D. Richards (Reg. No. 48,905)
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# FIG. 10H



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Title: Method and Arrangement for Inspection and Requalification of...
Patent Agent: Patrick D. Richards (Reg. No. 48,905)
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REPLACEMENT SHEETS Filing Date: September 29, 2000

U.S. Patent Application No. 09/672,793

Title: Method and Arrangement for Inspection and Requalification of...

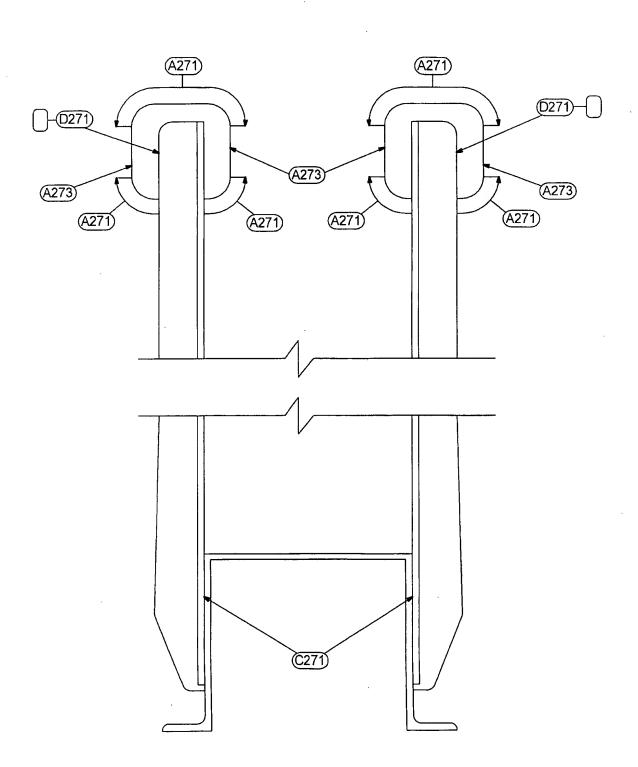
Patent Agent: Patrick D. Richards (Reg. No. 48,905)

Tel: 312.372.2000 Fax: 312.984.7700

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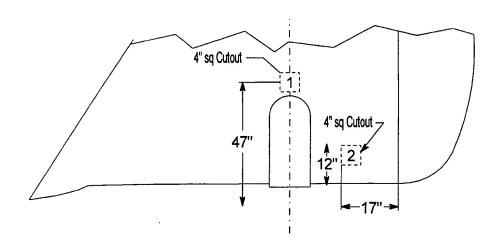
## FIG. 10I

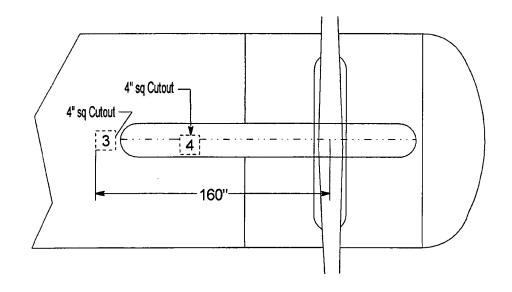


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Filing Date: September 29, 2000
U.S. Patent Application No. 09/672,793
Title: Method and Arrangement for Inspection and Requalification of...
Patent Agent: Patrick D. Richards (Reg. No. 48,905)
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FIG. 10J





REPLACEMENT SHEETS Filing Date: September 29, 2000

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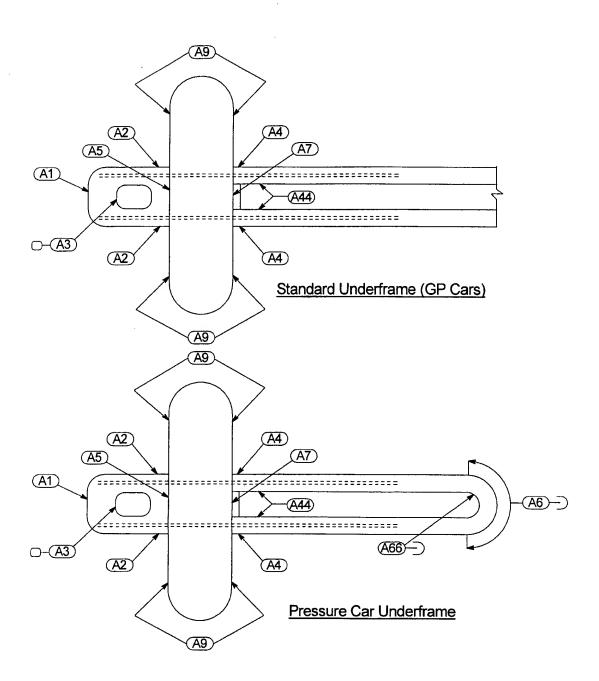
Title: Method and Arrangement for Inspection and Requalification of...

Patent Agent: Patrick D. Richards (Reg. No. 48,905)
Tel: 312.372.2000 Fax: 312.984.7700

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#### FIG. 11A



REPLACEMENT SHEETS Filing Date: September 29, 2000

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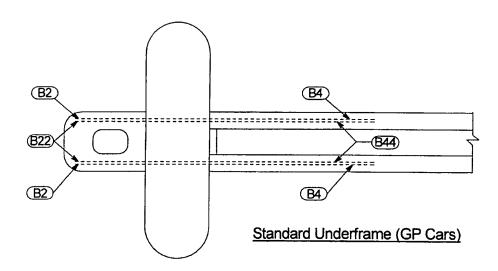
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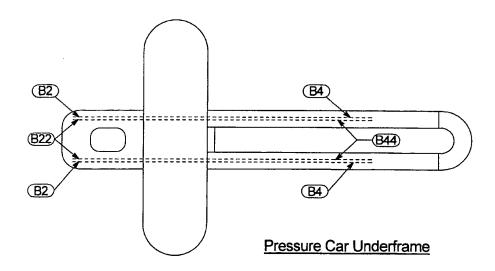
Patent Agent: Patrick D. Richards (Reg. No. 48,905)
Tel: 312.372.2000 Fax: 312.984.7700

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#### FIG. 11B



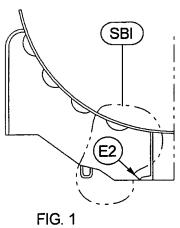


REPLACEMENT SHEETS
Filing Date: September 29, 2000
U.S. Patent Application No. 09/672,793
Title: Method and Arrangement for Inspection and Requalification of...
Patent Agent: Patrick D. Richards (Reg. No. 48,905)
Tel: 312.372.2000 Fax: 312.984.7700
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# FIG. 11C





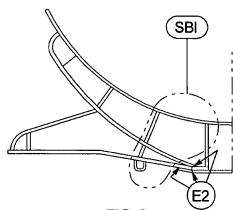
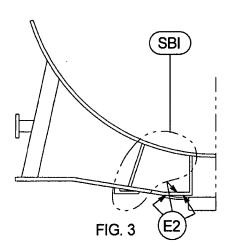
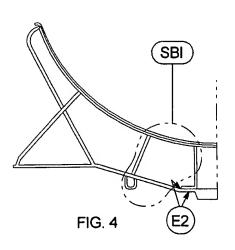


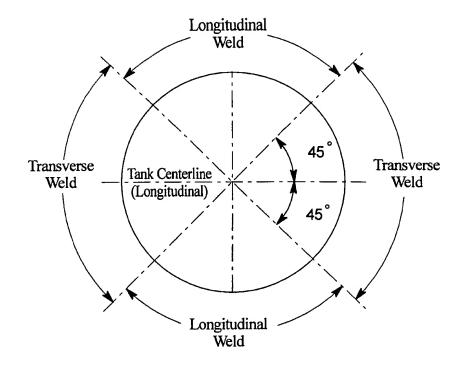
FIG. 2



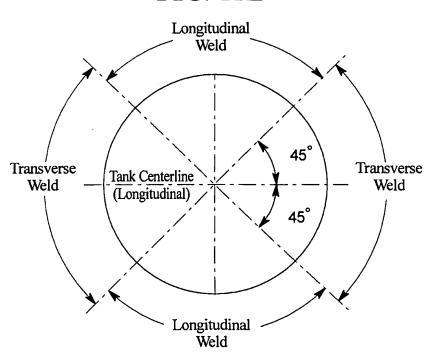


SBI FIG. 5

#### FIG. 11D



#### FIG. 11E



REPLACEMENT SHEETS
Filing Date: September 29, 2000
U.S. Patent Application No. 09/672,793
Title: Method and Arrangement for Inspection and Requalification of...
Patent Agent: Patrick D. Richards (Reg. No. 48,905)
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REPLACEMENT SHEETS
Filing Date: September 29, 2000
U.S. Patent Application No. 09/672,793
Title: Method and Arrangement for Inspection and Requalification of...
Patent Agent: Patrick D. Richards (Reg. No. 48,905)
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Patent Alana 2015 (R. le. 47440,027)
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FIG. 11F

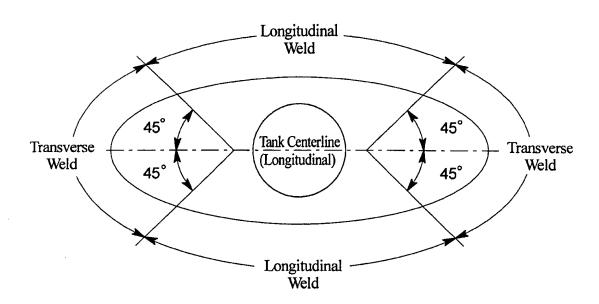
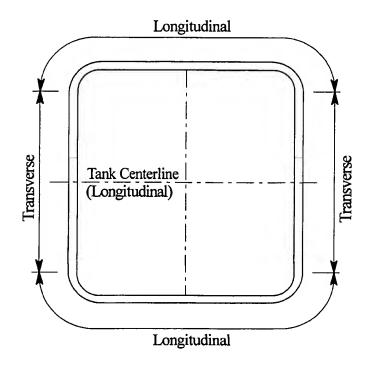


FIG. 11G



REPLACEMENT SHEETS

Filing Date: September 29, 2000 U.S. Patent Application No. 09/672,793

Title: Method and Arrangement for Inspection and Requalification of...

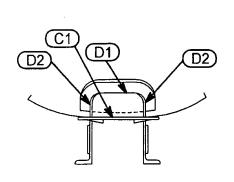
Patent Agent: Patrick D. Richards (Reg. No. 48,905)

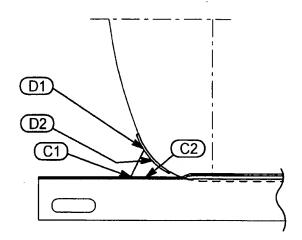
Tel: 312.372.2000 Fax: 312.984.7700

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#### FIG. 11H





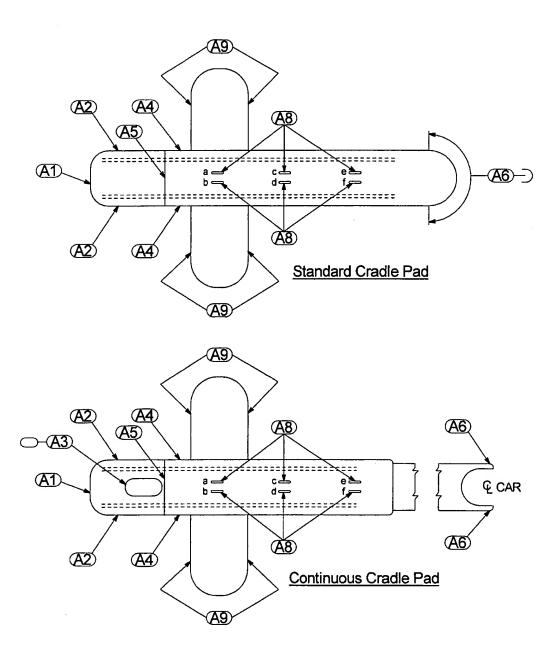
Title: Method and Arrangement for Inspection and Requalification of...

Patent Agent: Patrick D. Richards (Reg. No. 48,905)
Tel: 312.372.2000 Fax: 312.984.7700

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#### FIG. 12A



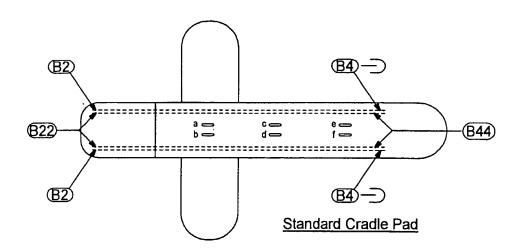
REPLACEMENT SHEETS Filing Date: September 29, 2000
U.S. Patent Application No. 09/672,793
Title: Method and Arrangement for Inspection and Requalification of...

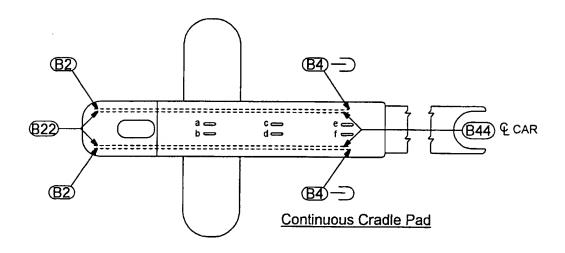
Patent Agent: Patrick D. Richards (Reg. No. 48,905)
Tel: 312.372.2000 Fax: 312.984.7700

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FIG. 12B

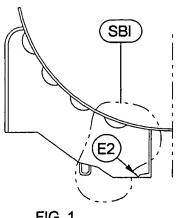




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Filing Date: September 29, 2000
U.S. Patent Application No. 09/672,793
Title: Method and Arrangement for Inspection and Requalification of...
Patent Agent: Patrick D. Richards (Reg. No. 48,905)
Tel: 312.372.2000 Fax: 312.984.7700
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# FIG. 12C





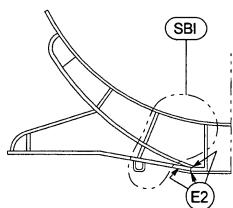
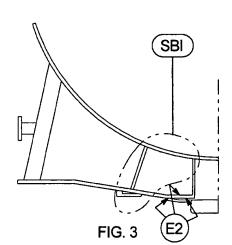
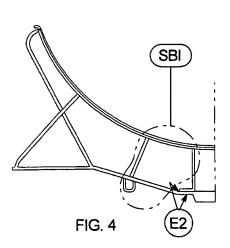
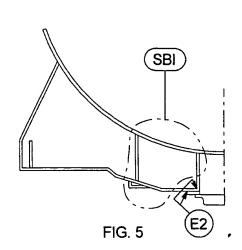


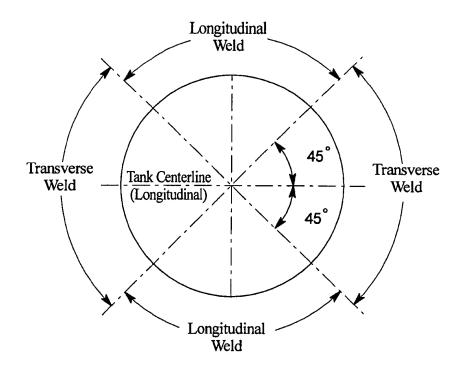
FIG. 2



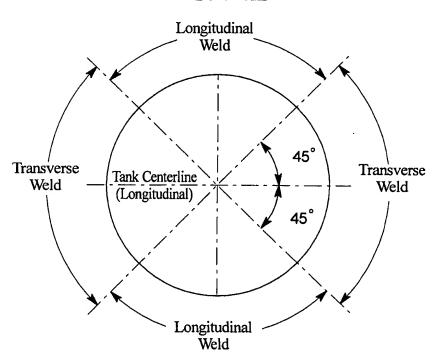




# FIG. 12D



#### FIG. 12E



REPLACEMENT SHEETS
Filing Date: September 29, 2000
U.S. Patent Application No. 09/672,793
Title: Method and Arrangement for Inspection and Requalification of...
Patent Agent: Patrick D. Richards (Reg. No. 48,905)
Patent Agent: 761: 312,372,2000 Fax: 312,984,7700
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U.S. Patent Application No. 09/672,793

Title: Method and Arrangement for Inspection and Requalification of...

Patent Agent: Patrick D. Richards (Reg. No. 48,905)
Tel: 312.372.2000 Fax: 312.984.7700

Docket No. 47440-015 (p.k.a. 47440-027)

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FIG. 12F

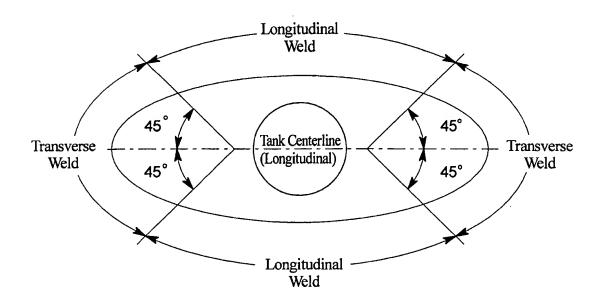
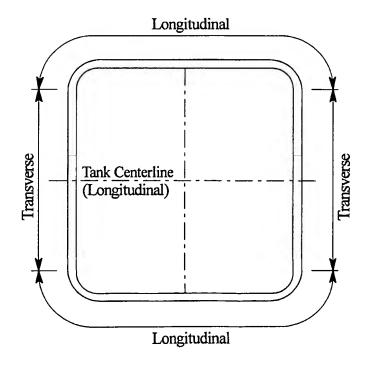


FIG. 12G



REPLACEMENT SHEETS Filing Date: September 29, 2000

U.S. Patent Application No. 09/672,793

Title: Method and Arrangement for Inspection and Requalification of...

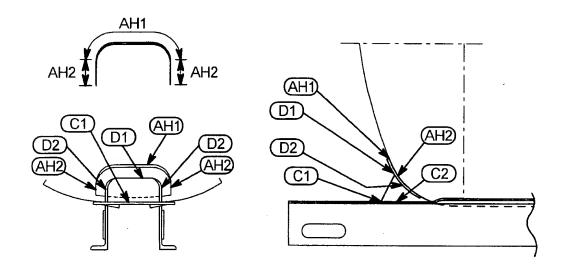
Patent Agent: Patrick D. Richards (Reg. No. 48,905)

Tel: 312.372.2000 Fax: 312.984.7700

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# FIG. 12H



REPLACEMENT SHEETS

Filing Date: September 29, 2000 U.S. Patent Application No. 09/672,793

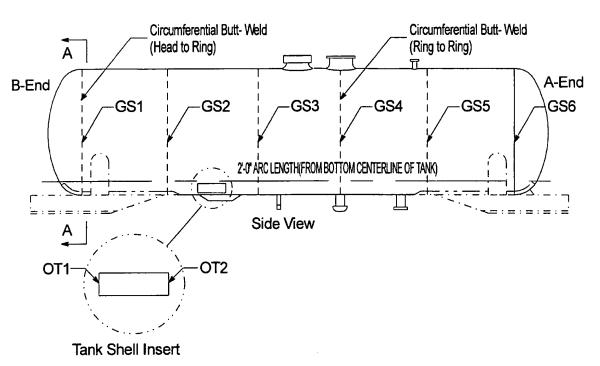
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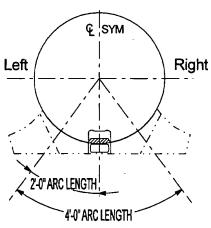
Patent Agent: Patrick D. Richards (Reg. No. 48,905) Tel: 312.372.2000 Fax: 312.984.7700

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#### FIG. 13A



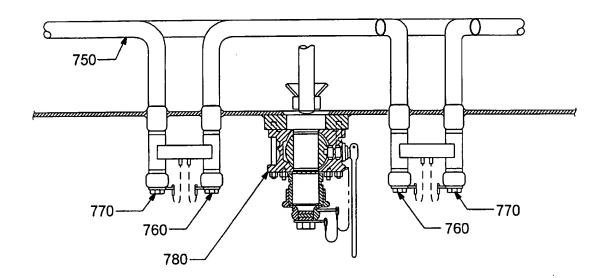


Section A-A (Looking Outboard from Inside of Tank)

REPLACEMENT SHEETS
Filing Date: September 29, 2000
U.S. Patent Application No. 09/672,793
Title: Method and Arrangement for Inspection and Requalification of...
Patent Agent: Patrick D. Richards (Reg. No. 48,905)
Tel: 312.372.2000 Fax: 312.984.7700
Docket No. 47440-015 (p.k.a. 47440-027) Sheet 59 c

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# FIG. 13B



Title: Method and Arrangement for Inspection and Requalification of...

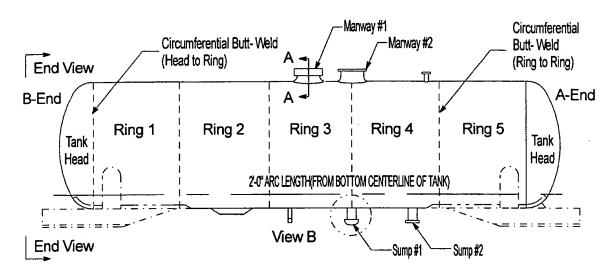
Patent Agent: Patrick D. Richards (Reg. No. 48,905)

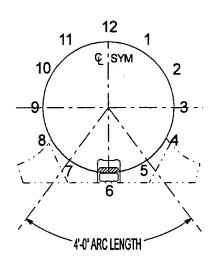
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## FIG. 14A





REPLACEMENT SHEETS Filing Date: September 29, 2000

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Title: Method and Arrangement for Inspection and Requalification of...

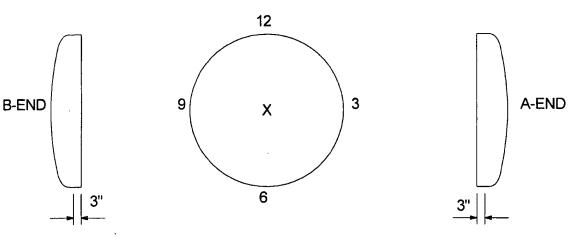
Patent Agent: Patrick D. Richards (Reg. No. 48,905)

Tel: 312.372.2000 Fax: 312.984.7700

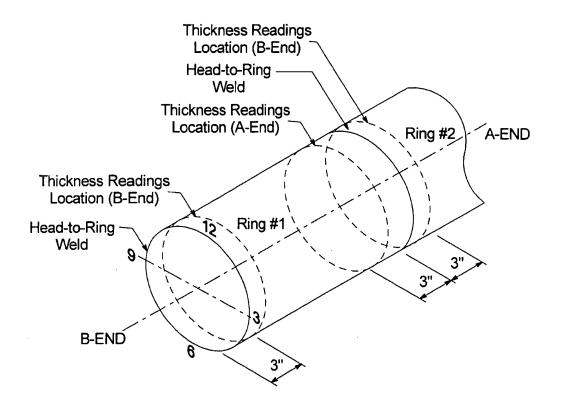
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#### FIG. 14B



**FIG. 14C** 



Title: Method and Arrangement for Inspection and Requalification of...

Patent Agent: Patrick D. Richards (Reg. No. 48,905) Tel: 312.372.2000 Fax: 312.984.7700

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#### FIG. 15A

#### ALLOWABLE SAFETY RELIEF VALVE PRESSURE TOLERANCES

Nominal STD <sup>1</sup> (psig)	Tolerance (+/-) <sup>4</sup> (psig)	Minimum STD <sup>1</sup> (psig)	Maximum STD <sup>1</sup> (psig)	Minimum VTP <sup>1</sup> (psig)	Gauge Range <sup>5</sup> (psig)	Maximum Gauge Increment <sup>5</sup> (psig)
35	3	32	38	28	0-100	1
75	3	72	78	60	0-150/160	1
150	4.5	145.5	154.5	120	0-300	2
225	6.75	218.25	231.75	180	0-400	5
247.5	7.4	240.1	254.9	196	0-400	5
255	7.7	247.3	262.7	204	0-400	5
280.5	8.4	272.1	288.9	224	0-500	5
300	9	291	309	240	0-500	5
330	10	320	340	264	0-500	5
375	11.25	363.75	386.25	300	0-600	10
450	13.5	436.5	463.5	360	0-750	10

#### NOTES:

- 1. STD indicates start-to-discharge.
- 2. VTP indicates vapor-tight pressure.
- 3. Valves should be set or reset to NOMINAL STD pressure.
- 4. DOT requirements for tolerance are given in 49CFR173.31(c)(6). Pressure tolerances listed above have been shown here to assist testing personnel and are not intended to alter any DOT requirements.
- 5. Digital or dial gauges of greater range may be used if accuracy and sensitivity levels are equal to or better than required above.

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Tel: 312.372.2000 Fax: 312.984.7700
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## FIG. 15B

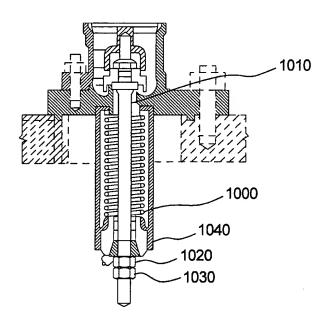
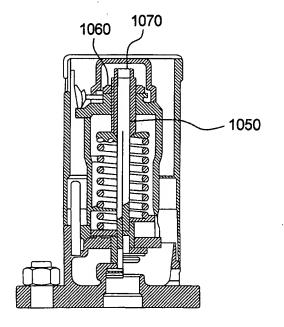


FIG. 15C



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## FIG. 15D

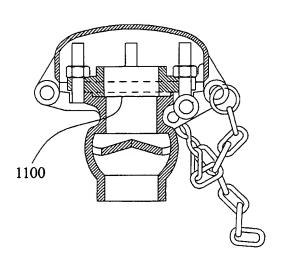
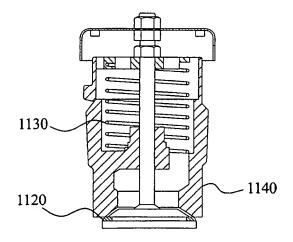
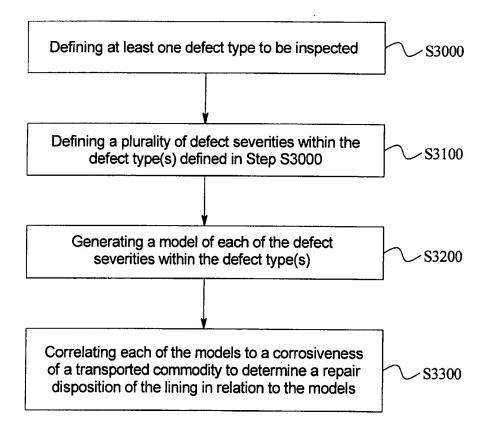


FIG. 15E



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#### FIG. 16



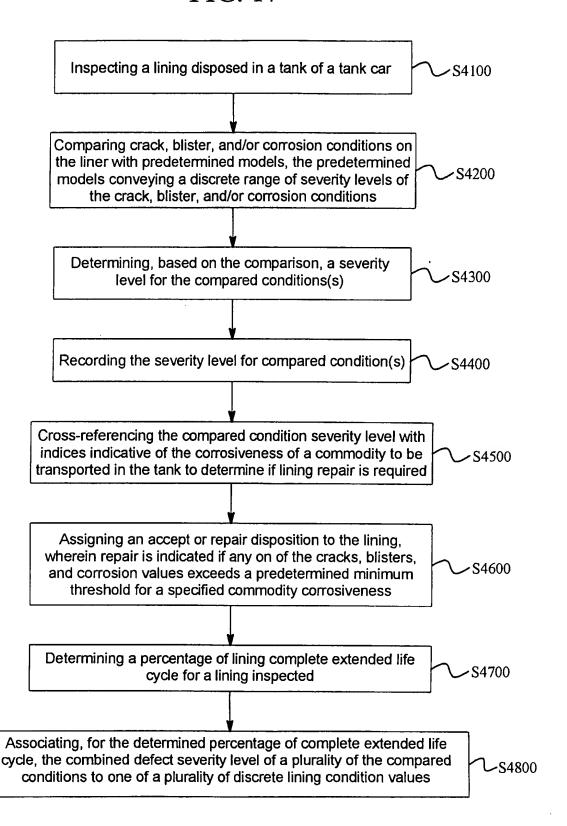
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#### FIG. 17



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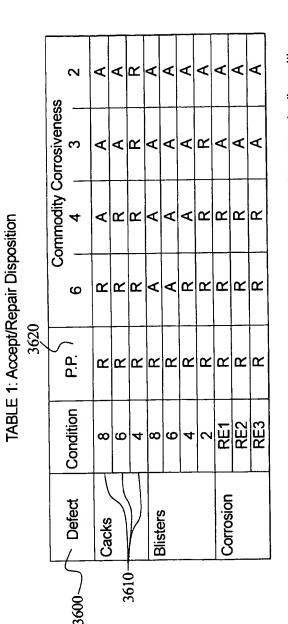
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Patent Agent: Patrick D. Richards (Reg. No. 48,905)
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FIG. 18A



A = Accept as is disposition

R = Repair disposition

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Lining System Operating Characteristics

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# FIG. 18B

ije	10	(0)	(0	<b>10</b>	رم	(0	(0	(0
Estimated Life	8 years	8 years	7 years	7 years	7 years	8 years	6 years	12 years
Failure Criteria	Cracking due to mechanical impact (direct or reverse), temperature cycling or vibration. Hydrogen grooving of steel under coating in highly concentrated sulfuric acid.	Cracking due to mechanical impact (direct or reverse), temperature cycling or vibration.	Becomes brittle on aging. May blister in unsuitable chemicals. May crack under impact and bending.	Becomes brittle on aging. May blister and/or soften in certain chemicals. May crack under impact and bending.	Becomes brittle on aging. May blister and/or soften in certain chemicals. May crack under impact and bending.	Becomes brittle with aging. May slightly soften in certain solvents.  Better Crack and Impact Resistant	Becomes slightly brittle with aging. May blister and/or soften in certain solvents. Fair Crack and Impact Resistant	Oxidizing chemicals may attack the sheet lining and embrittle. Sheets may loose adhesion. Welds may deteriorate (corrosion)
Recommended Service	Organic and Inorganic Acids (concentrated and diluted) Less suitable for strong Alkalis Resistant against most Solvents Can be used for Food Grade Chemicals	Diluted Organic and Inorganic Acids Good resistance against strong Alkalis Can be used for Food Grade Chemicals Resistant to most Solvents	Diluted Organic and Inorganic Acids Very good resistance against hot alkalis Good Solvent Resistance	Diluted, non oxidizing Inorganic Acids Very good resistance against hot alkalis Good Solvent Resistance	Acidity not lower than pH 2 Very good Alkali Resistance Good Solvent Resistance	Diluted, non oxidizing Inorganic Acids Very good resistance against Alkalis Good Solvent resistance	Good resistance against diluted alkalis Resistant against some solvents Can be Food Grade Compliant	Good Acid and Alkali Resistance Not suitable for most Solvents Maximum Temperature 150 F Hard rubber better resistant than soft rubber
Properties	Very good Water Resistance Good Corrosion Resistance High Temperature Resistant Difficult to repair or to touch-up	Very good Water Resistance Good Corrosion Resistance Less brittle than unmodified phenolics	Very good Water Resistance Good Corrosion Resistance Two-pack materials	Good Water Resistance Good Corrosion Resistance Two-pack materials	Good Water Resistance Good Corrosion Resistance Two-pack materials	Good Water Resistance Good Corrosion Resistance Plural Component Appl.	Good Water Resistance Good Corrosion Resistance Two-pack materials	Application using in-situ vulcanizing and adhesives
approx. dft	8 to 10 mils in multiple coats	8 to 10 mils in multiple coats	12 to 15 mils in 2 coats	12 to 15 mits in 2 coats	12 to 15 mils	12 to 15 mils in 1 coat	10 - 14 mils 2 coats	N/A
Lining System	(Unmodified) High Bake Phenolic (400°F)	(Modified) High Bake Phenolic (400°F)	(Modified) High Bake Epoxy/Amine (400°F)	(Modified) High Bake Epoxy/Amine (250°F)	Epoxy/Phenolic/Amine air-dry or force curing	Epoxy/Amine Solvent Free. Air dry of force Curing (*)	Epoxy/Polyamidoamine Force curing	Rubber Sheet Lining

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	_			1	Ι		Ţ
\\ \\		or C	(45%) . Ft	(15%)	(15%) . Ft	(45%) . Ft	(15%) . Ft
		Poor D	> No. 6	> No. 6 > No. 2 (15%) < Re 2 < 6 mils > 20 Sq. Ft	> No. 4 > No. 4 (15%) < Re 2 < 5 mils > 20 Sq. Ft	> No. 4 > No. 2 (45%) < Re 2 < 5 mils > 20 Sq. Ft	> No. 4 > No. 4 (15%) < Re 3 < 5 mils > 20 Sq. Ft
	Fair					<del></del>	
Matrix		Fai	> No. 8	> No. 8 > No. 4 (45%) < Re.2 > 6 mils < 20 Sq. Ft	> No. 8 > No. 4 (15%) < Re 2 < 5 mils < 20 Sq. Ft	> No. 6 > No. 2 (15%) < Re.2 > 5 mils < 20 Sq. Ft	> No. 4 > No. 4 (15%) < Re 2 > 5 mils < 20 Sq. Ft
TABLE 2: Lining Condition Matrix							<u> </u>
	Lining Condition	Good B	No Defects > No. 8 (2.5%) No Defects > 7 mils No Spots	No Defects > No. 6 (15%) No Defects > 7 mils No Spots	No Defects > No. 6 (15%) No Defects > 5 mils < 10 Sq. Ft	No Defects > No. 4 (15%) No Defects > 5 mils < 10 Sq. Ft	No Defects > No. 4 (15%) No Defects > 5 mils < 10 Sq. Ft
2: Lin			2 2 2 2 2	0 Z 0 N 0 Z 1 Z 1 Z		N V N V N V V V V V V V V V V V V V V V	N V N V V V V V V V V V V V V V V V V V
TABLE		Excellent A	No Defects No Defects No Defects > 8 mils No Spots	No Defects No. 6 (2.5%) No Defects > 7 mils No Spots	No Defects > No. 6 (2.5%) No Defects > 6 mils No Spots	No Defects No. 6 (15%) No Defects > 5 mils < 10 Sq. Ft	No Defects > No. 4 (15%) No Defects > 5 mils < 10 Sq. Ft
	Defect	Type	Crack Blister Corrosion DFT Stains	Crack Blister Corrosion DFT Stains	Crack Blister Corrosion DFT Stains	Crack Blister Corrosion DFT Stains	Crack Blister Corrosion DFT Stains
	Complete	Extended Life Cycle	0 - 25%	26 - 42%	43 - 58%	59 - 83%	> 83%
┖	_		<u> </u>		<b>-</b>	47	, A

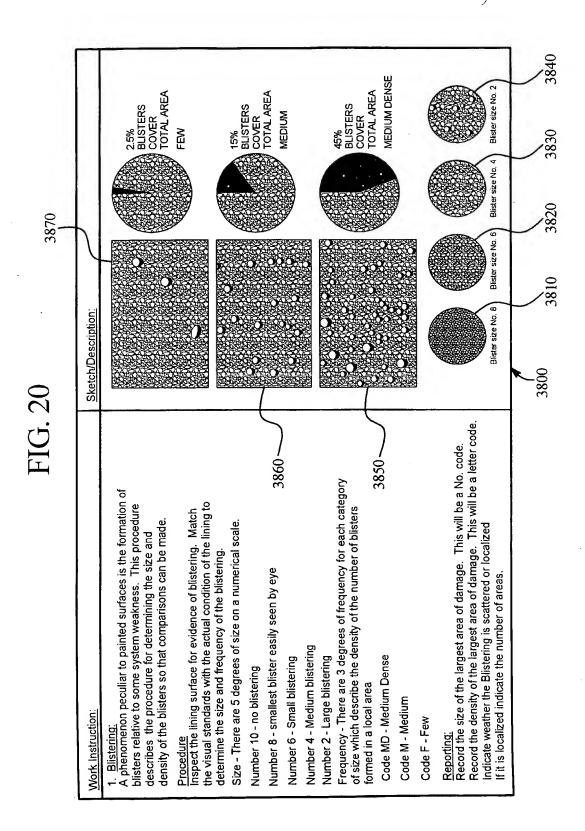
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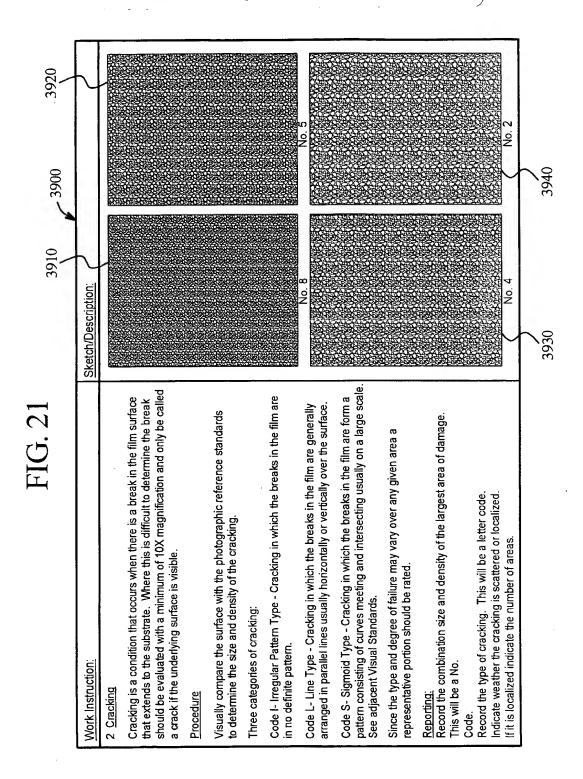


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Patent Agent: Patrick D. Richards (Reg. No. 48,905)
Tel: 312.372.2000 Fax: 312.984.7700

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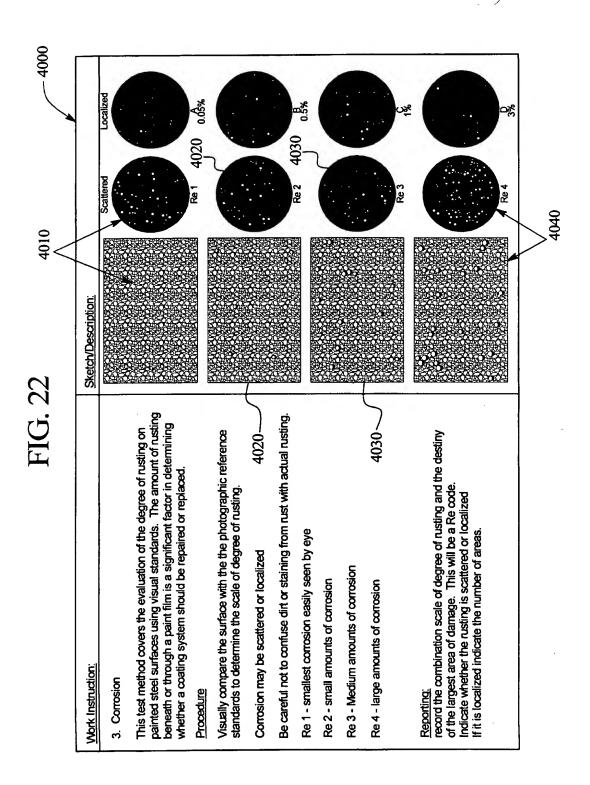
Title: Method and Arrangement for Inspection and Requalification of...

Patent Agent: Patrick D. Richards (Reg. No. 48,905)

Tel: 312.372.2000 Fax: 312.984.7700

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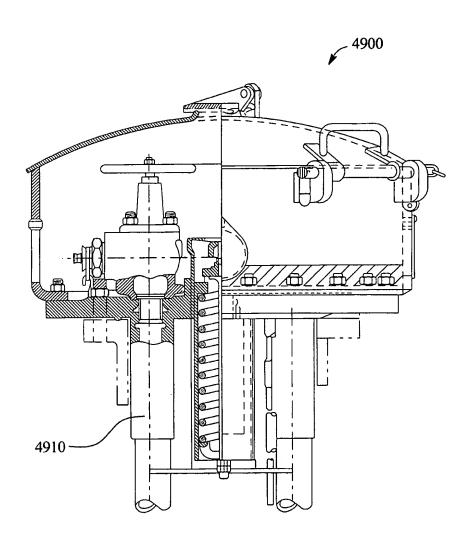
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# FIG. 23



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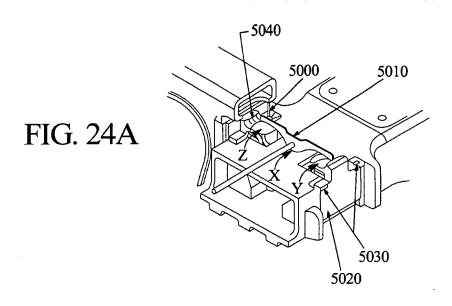
U.S. Patent Application No. 09/672,793

Title: Method and Arrangement for Inspection and Requalification of...
Patent Agent: Patrick D. Richards (Reg. No. 48,905)

Tel: 312.372.2000 Fax: 312.984.7700

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**FIG. 24B** 

Type of Truck	Repair When Total Clearance Between Bolster and Truck Side Frame Columns Reaches:		Repair to These Nominal Clearance Dimensions Between Bolster and Truck Side Frame:		
	Lateral (inches)	Longitudinal (inches)	Lateral		Total
			Inside (inches)	Outside (inches)	Longitudinal (inches)
Trucks WTH built-in snubbing features having roller bearings which provide lateral (all bearing sizes): or having 5" x 9" or 5 1/2" x 10" roller bearings which provide no bearing lateral.	1 1/8"	*	1/4"	1/4"	*
Trucks with built-in snubbing features having 6" x 11", 6 1/2 x 12" or 7" x 12" roller bearings which provide no bearing lateral.	1 1/2"	*	1/2"**	1/2"**	*

<sup>\*</sup> Longitudinal clearances are primarily a matter of wear of frame or bolster column wear plates, friction shoes and bolster or frame column surfaces. See maintenance instructions from truck designer of manufacturer.

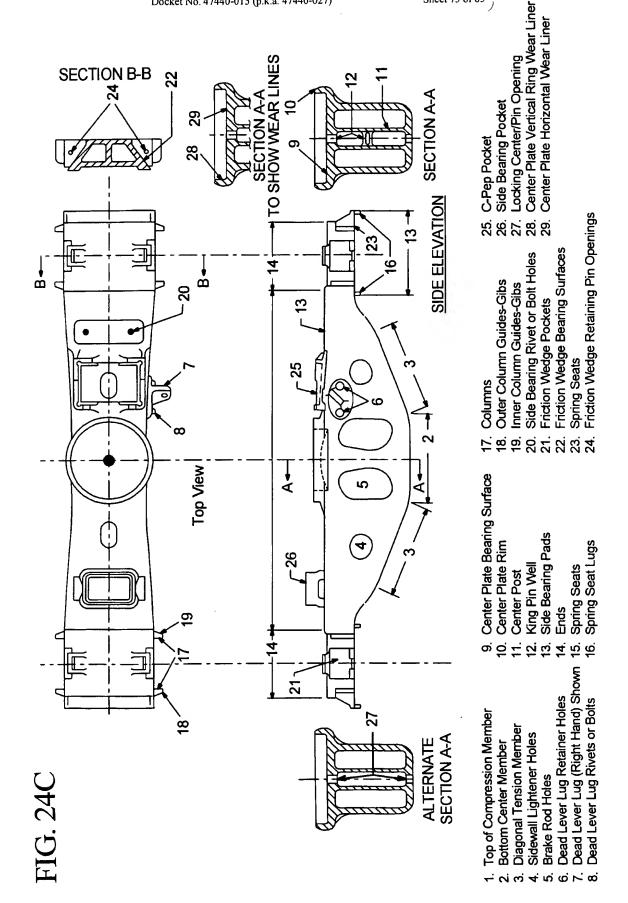
<sup>\*\* 1/4&</sup>quot; and 5/8" clearances are acceptable on bolster manufactured prior to 1987.

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### FIG. 24D

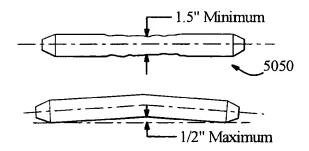


FIG. 24E

Bettendorf	<u>Buckeye</u>	<u>ASF</u>	Pittsburgh Steel	Scullin Steel 4665   5364   5869-B		
UT456	3-1776	7273	Foundry			
Dresser TF5105  Dominion TF-5100  Canadian Steel Foundry 26565	F-420 F-535	7323 21182 21362	3-1673 3-1674 4-1862 4-2045 12897 12921 21263	4770 4891 4942 5171 5220 5321-A 5321-B 5321-C 5321-F 5321-H	5364-C 5364-E 5413-B 5483-A 5483-B 5600-A 5600-B 5600-C 5811-A 5869-A	5917-A 6260-C 6260-D 6428-A 6577-A 6656 6673-A 7207 42-CS-180

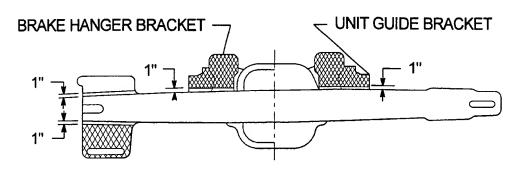
Title: Method and Arrangement for Inspection and Requalification of...

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#### FIG. 24F



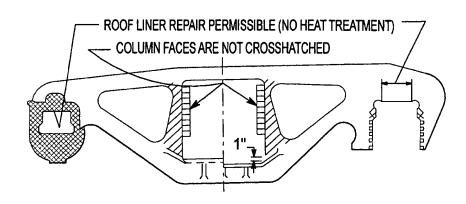
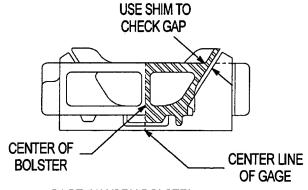
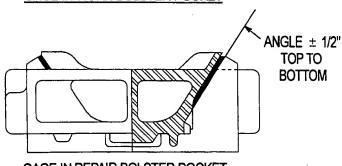


FIG. 24G



GAGE IN WORN BOLSTER POCKET



GAGE IN REPAIR BOLSTER POCKET

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### FIG. 24H

AAR Designation	Load Carrying Spring Condemning Free Height
D3	8 5/8"
D4	9 1/16"
D5	9 5/8"
D6	9 5/16"
D6A	8 3/8"
D7	10"

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## FIG. 25A

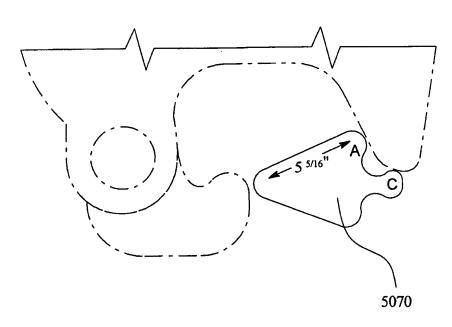
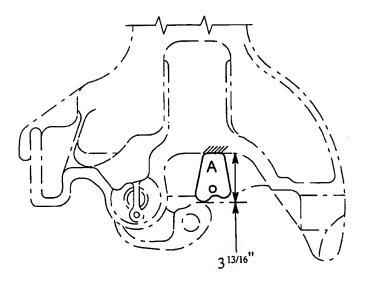
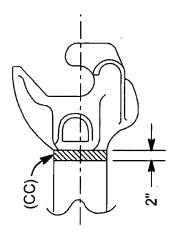


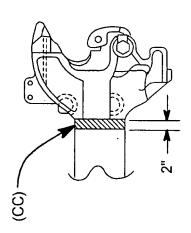
FIG. 25B

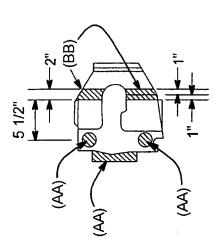


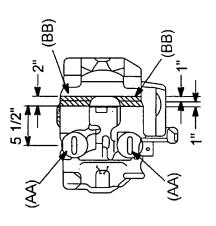
REPLACEMENT SHEETS
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U.S. Patent Application No. 09/672,793
Title: Method and Arrangement for Inspection and Requalification of...
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Tel: 312.372.2000 Fax: 312.984.7700
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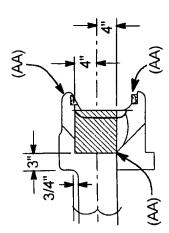
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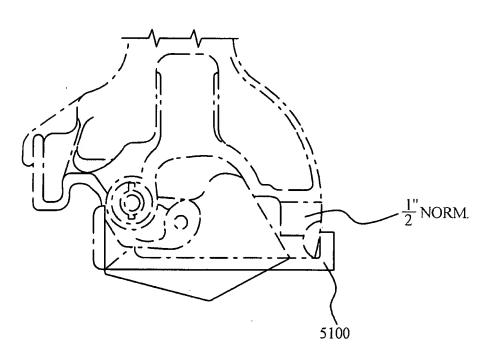
Patent Agent: Patrick D. Richards (Reg. No. 48,905)

Tel: 312.372.2000 Fax: 312.984.7700

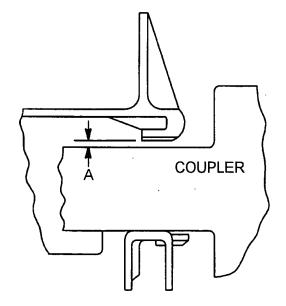
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# FIG. 25D



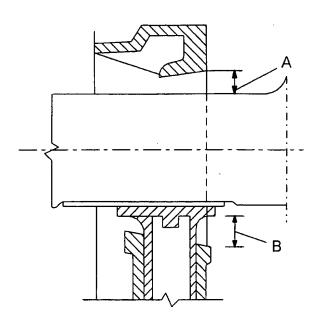
# FIG. 25E



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### FIG. 25F



### FIG. 25G

Coupler Type	Striker	Min. Clearance Spring Basket Top to Underside of Carrier Lip. Dimension "B" (inches)
F70,F71,F72,SF70 29 1/4" Length	1 1/8"	1 5/8"
F79,SF79 43" Length	2 3/8"	3 1/2"

REPLACEMENT SHEETS

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## FIG. 25H

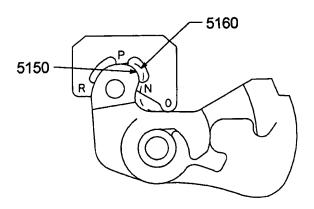
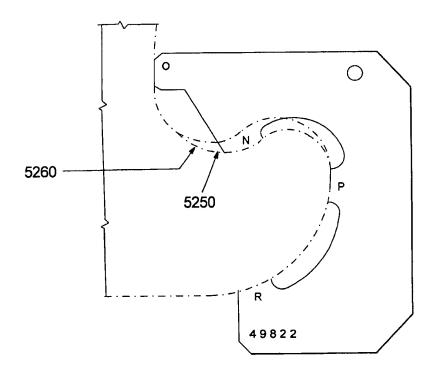


FIG. 25 I



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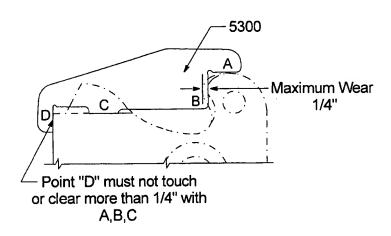
Title: Method and Arrangement for Inspection and Requalification of...

Patent Agent: Patrick D. Richards (Reg. No. 48,905)
Tel: 312.372.2000 Fax: 312.984.7700

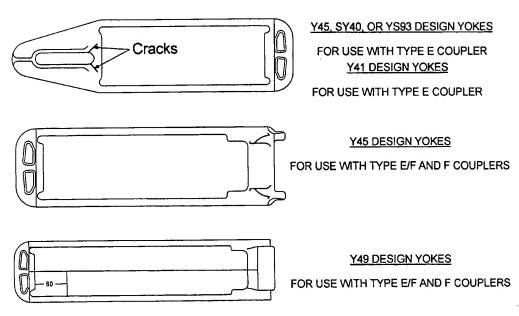
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### FIG. 25J



#### FIG. 25K



REPLACEMENT SHEETS Filing Date: September 29, 2000

U.S. Patent Application No. 09/672,793

Title: Method and Arrangement for Inspection and Requalification of...

Patent Agent: Patrick D. Richards (Reg. No. 48,905)

Tel: 312.372.2000 Fax: 312.984.7700

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### FIG. 26a

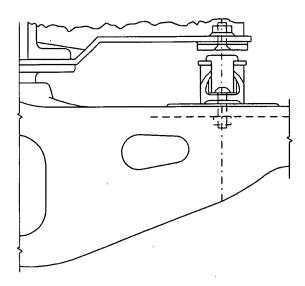


FIG. 26b

